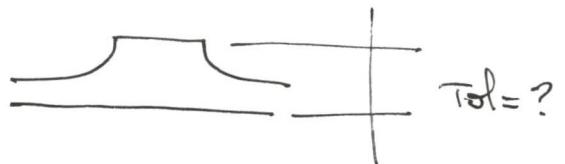


2012 12 05'



Mirko

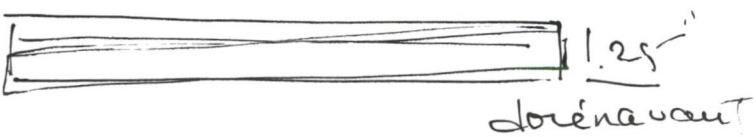


- ① Tol prod = ?
- ② Tol d'usure = ?
- ③ Ajouter cotés + tol:

AVEC TOUTES



- ① Quelles cotés ajouter tol?
- ② " " " difficultés à faire?
- ③



AVEC SITES

- Où réjeté = ?
- Qui paie ?

Quotation



www.helitowcart.com

Quote no: _____ **Date:** _____

Date:

Ship to

Seller: Helitowcart (Vanair inc.)
877A Alphonse-Desrochers
St-Nicolas, Levis,
Quebec, Canada, G7A 5K6

Final Address

Address:

Contact:

Email:

Tel:

Contact

Email

Tel:

Contact: Nathalie Barboza

Email: info@helitowcar.com

Tel: +1 418 561 4512

Fax: +1 418 836 4576

- Quotation valid 30 days

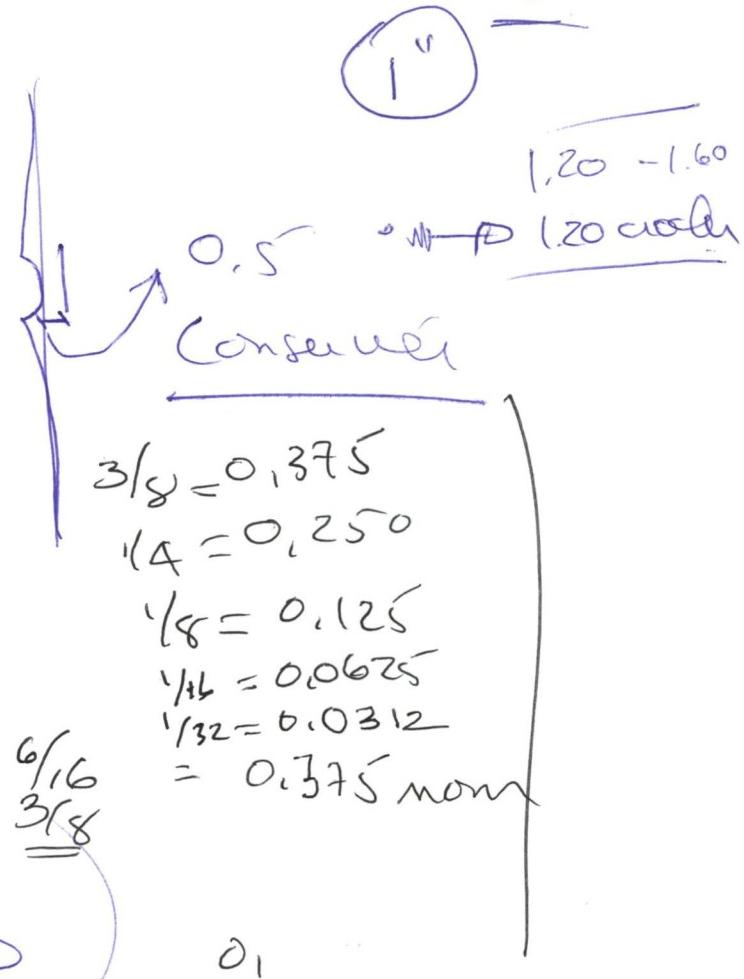
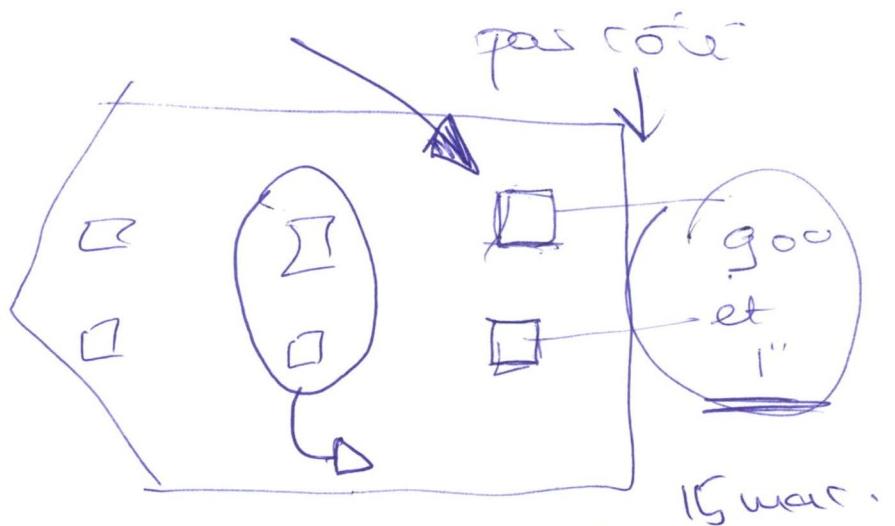
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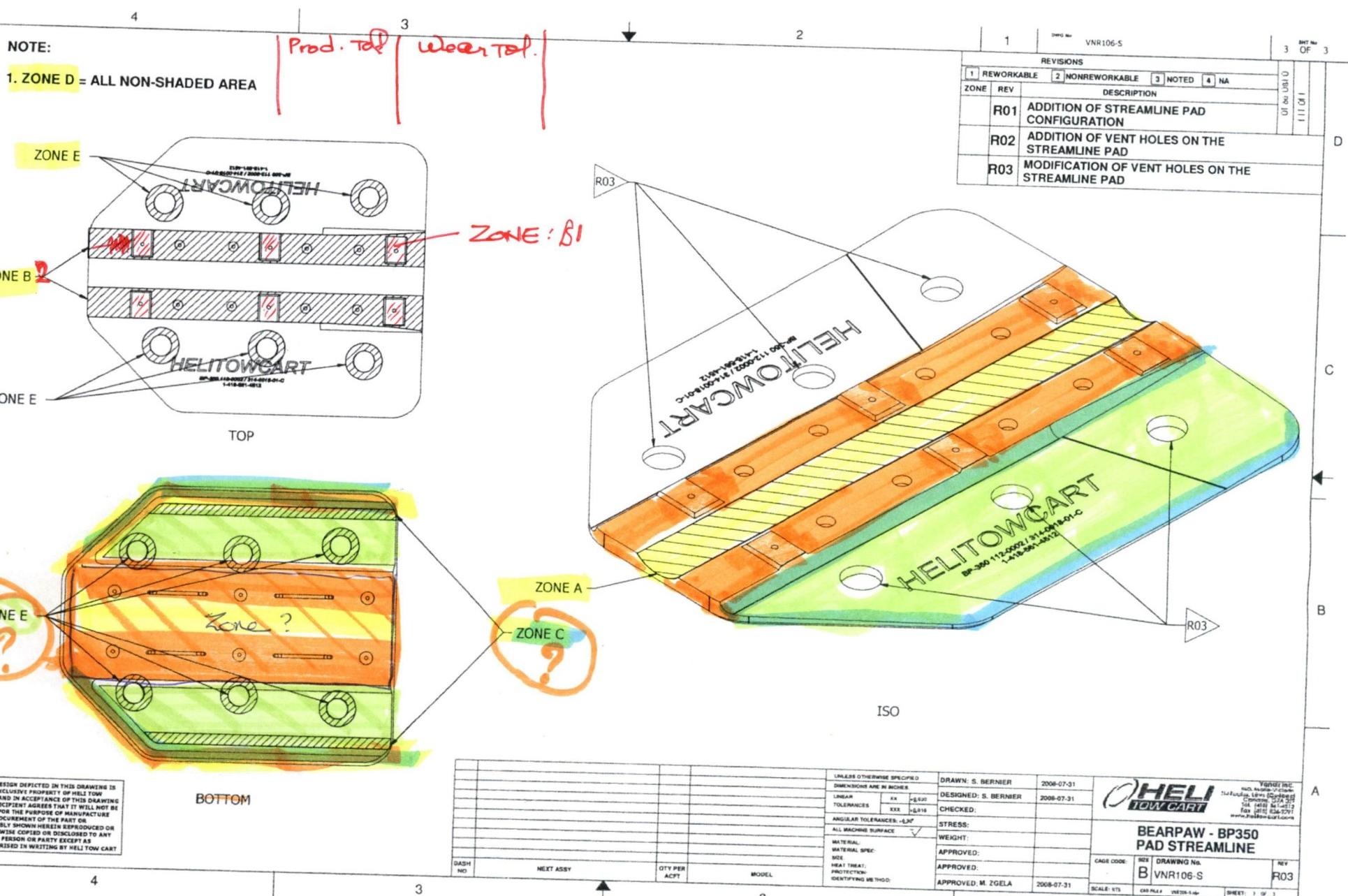
Package Qty

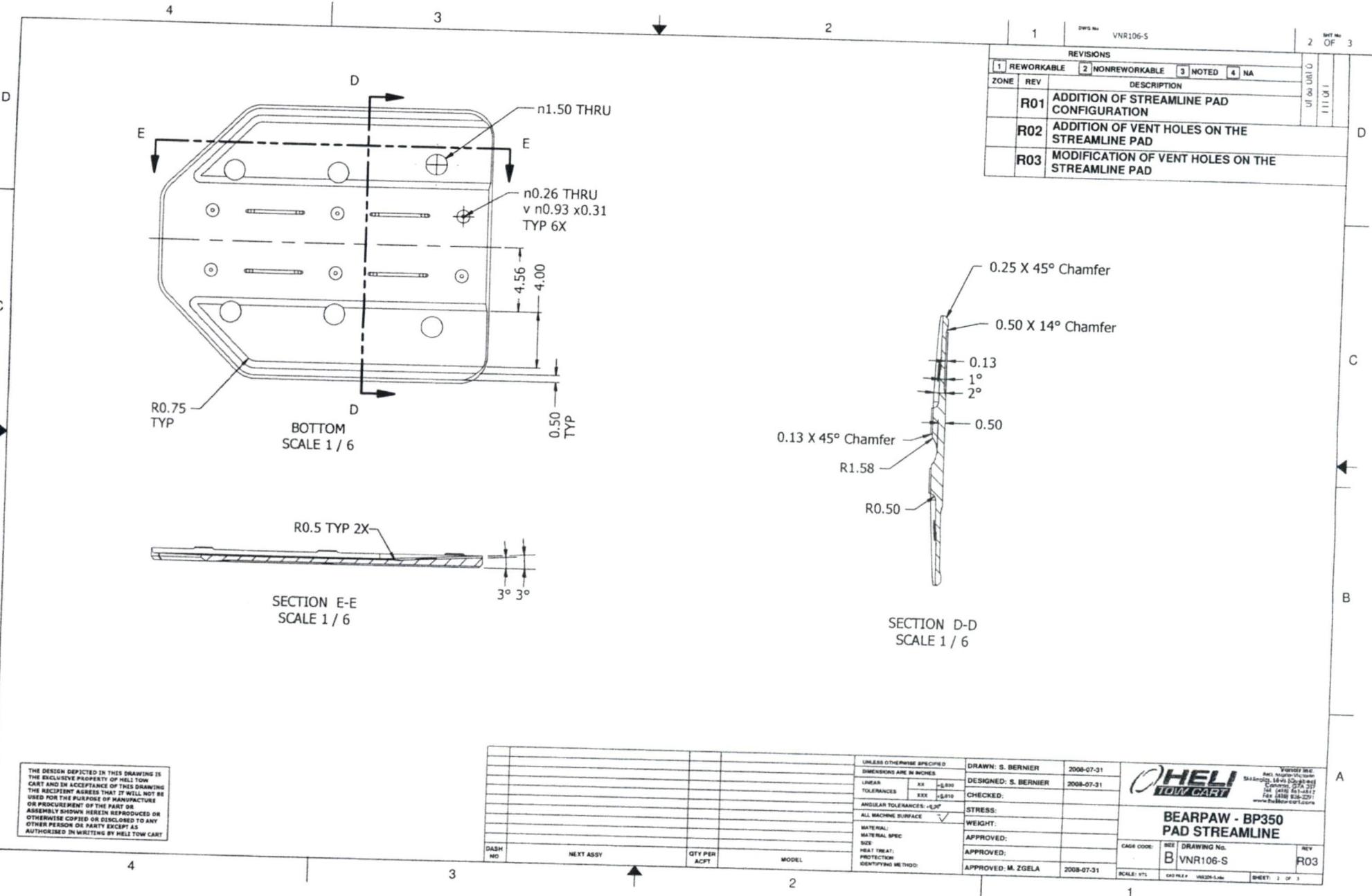
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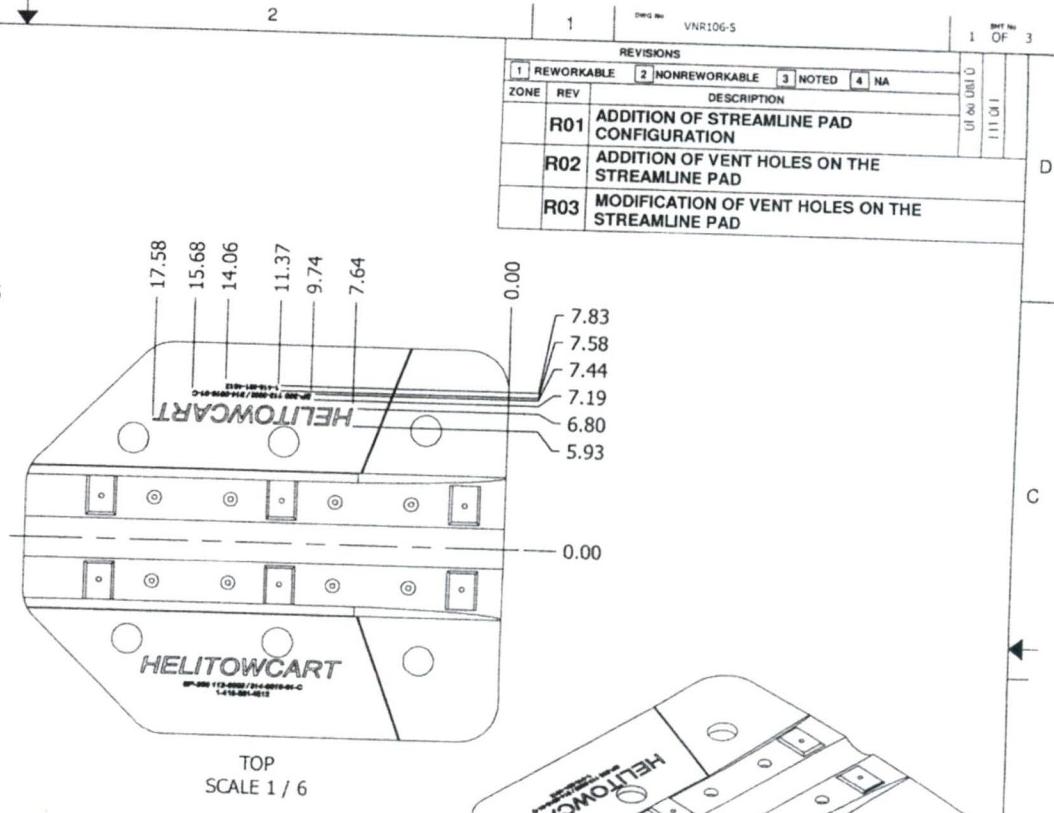
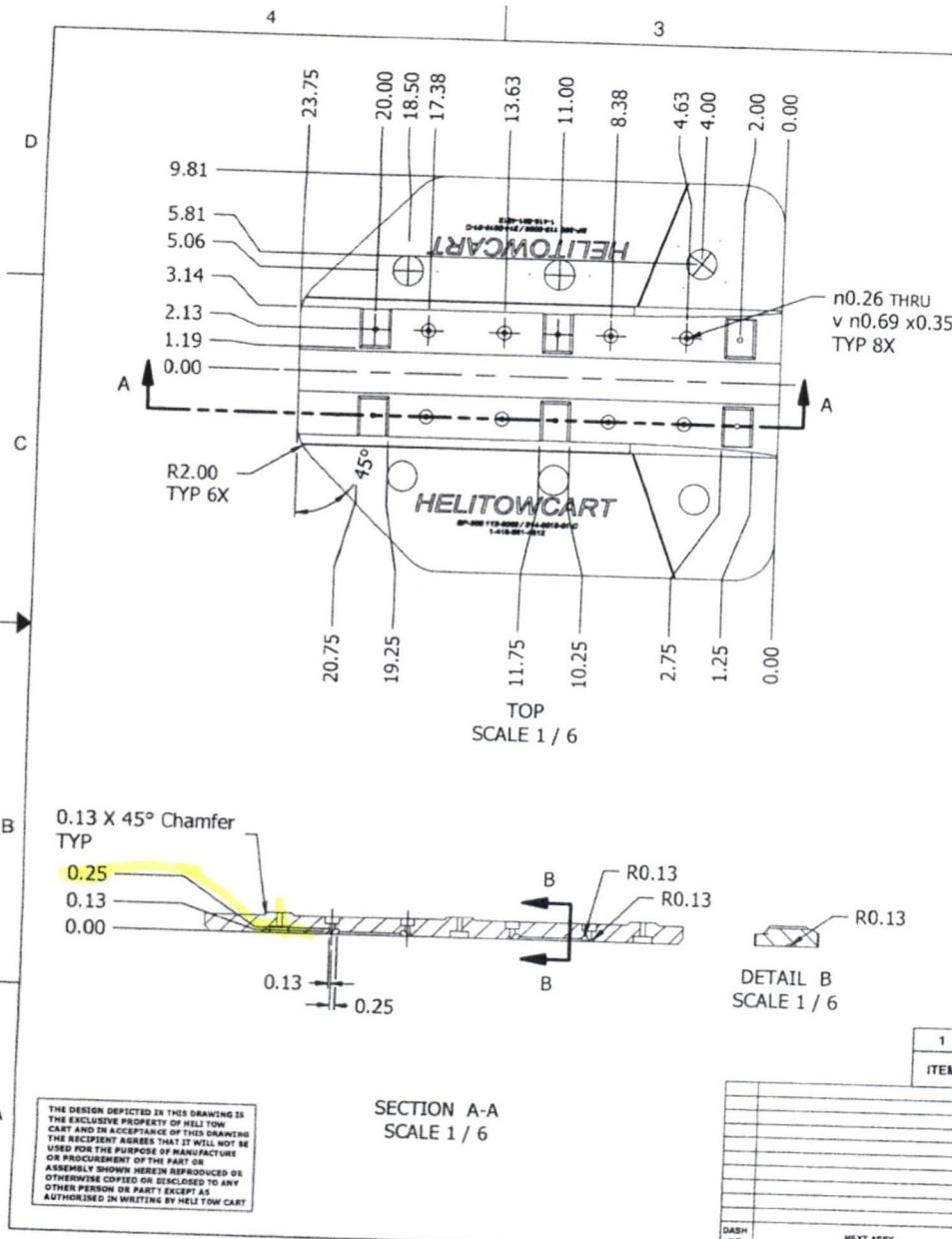
Size

•Lead Time: In stock



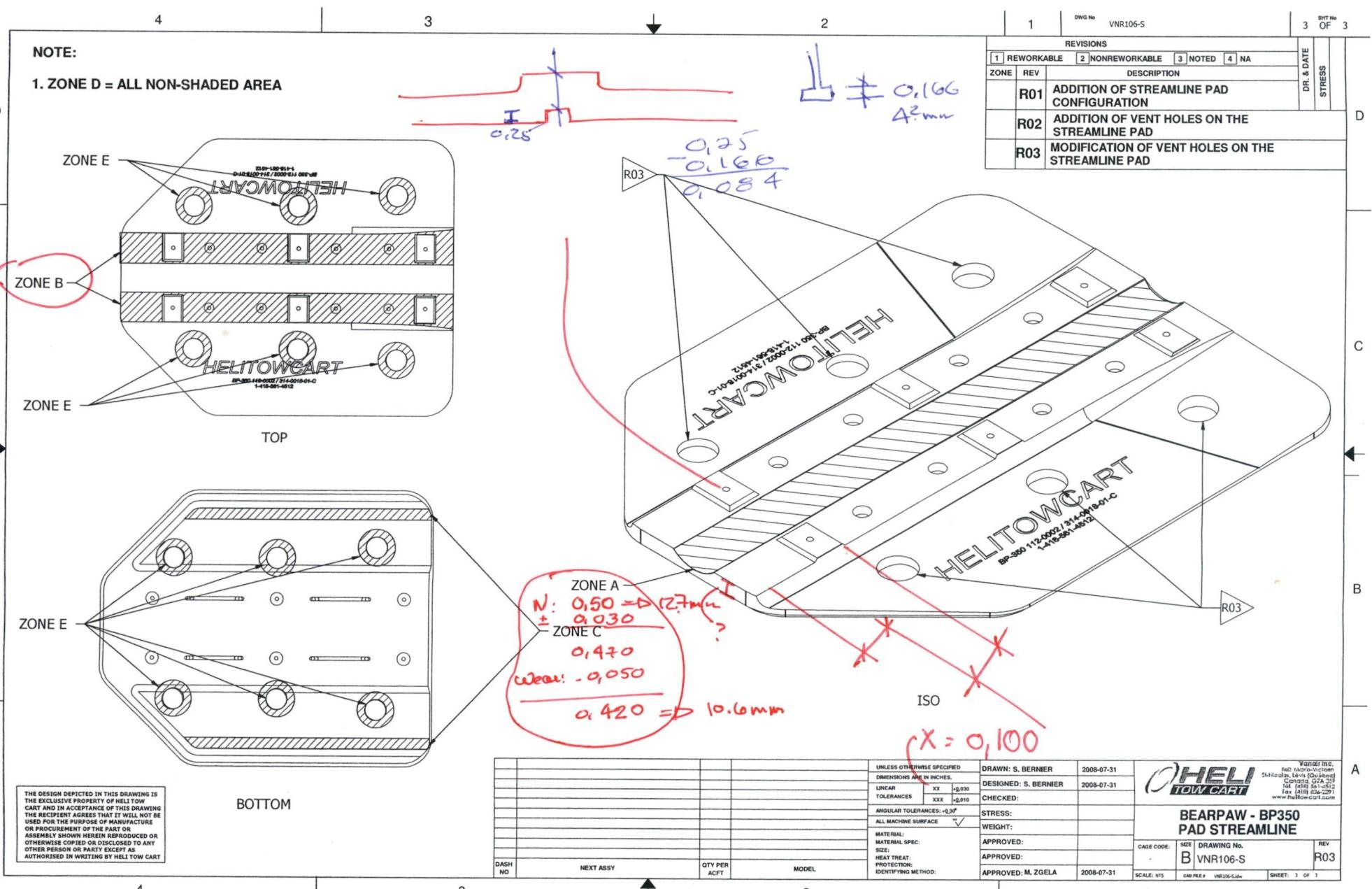


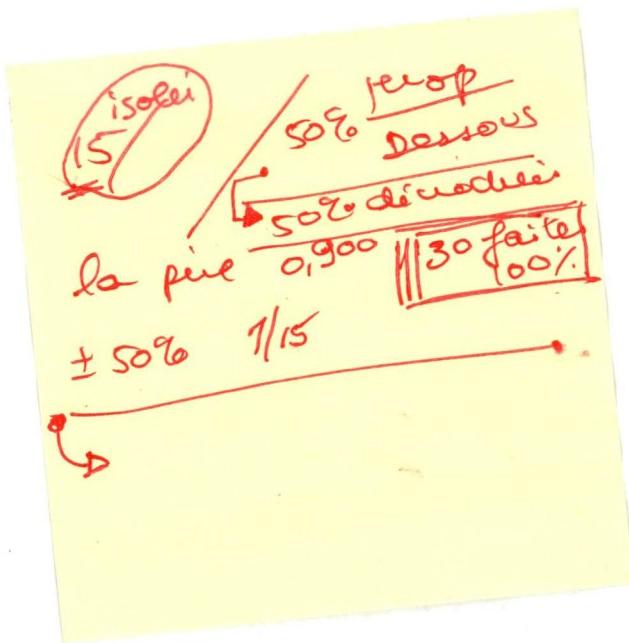




ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE
1	1	314-0018-01-S	PAD STREAM LINE	POLYETHYLENE UHMW	BLACK	1
			UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.	DRAWN: S. BERNIER	2008-07-31	
			LINEAR TOLERANCES: $+0.000$ -0.030	DESIGNED: S. BERNIER	2008-07-31	
			ANGLE TOLERANCES: $\pm 30^\circ$	CHECKED:		
			ALL MACHINE SURFACE ✓	STRESS:		
			MATERIAL: POLYETHYLENE UHMW	WEIGHT:		
			MATERIAL SPEC: BP-350	APPROVED:		
			SIZE: 17.58 x 1.50	APPROVED:		
			HEAT TREAT: PROTECTION:	APPROVED:		
			IDENTIFYING METHOD:	APPROVED: M. ZGELA	2008-07-31	
				CAGE CODE: B	DRAWING NO: VNR106-S	REV R03
				SCALE: 1:1	DATE ISSUED: 08-08-08	

a. Rebuilt 08.08.08





三

4

3

2

DWG No VNR106

SHT No 3

D

D

E

n1.50 THRU

n0.26 THRU
v n0.93 x 0.31
TYP 6X

4.56

4.00

R0.75
TYP

BOTTOM
SCALE 1 / 6

(A) 0.50
TYP

difficile à tenir
Sup ↑ Tol.

R0.5 TYP 2X

SECTION E-E
SCALE 1 / 6

3° 3°

Fig. 1. Schematic diagram of the experimental setup.

B

SECTION E-E
SCALE 1 / 6

A

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORISED IN WRITING BY HELI TOW CART

UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE IN INCHES.
 LINEAR XX ±0.030
 TOLERANCES XXX ±0.010
 ANGULAR TOLERANCES: ± 2°
 ALL MACHINE SURFACE ✓
 MATERIAL:
 MATERIAL SPEC:
 SIZE:
 HEAT TREAT:
 PROTECTION:
 IDENTIFYING METHOD:

DRAWN: S. BERNIER	2008-07-
DESIGNED: S. BERNIER	2008-07-
CHECKED:	
STRESS:	
WEIGHT:	
APPROVED:	
APPROVED:	
APPROVED: M. ZOGELA	2008-07-

OHEL
TOW CART

Vander Inc.
Bd. Marie-Victorin
544 Nicolas, Lévis (Québec)
Canada, G7A 3J1
tel: (418) 561-4551
fax: (418) 561-2299
www.hollowcart.com

**BEARPAW - BP350
PAD STREAMLINE**

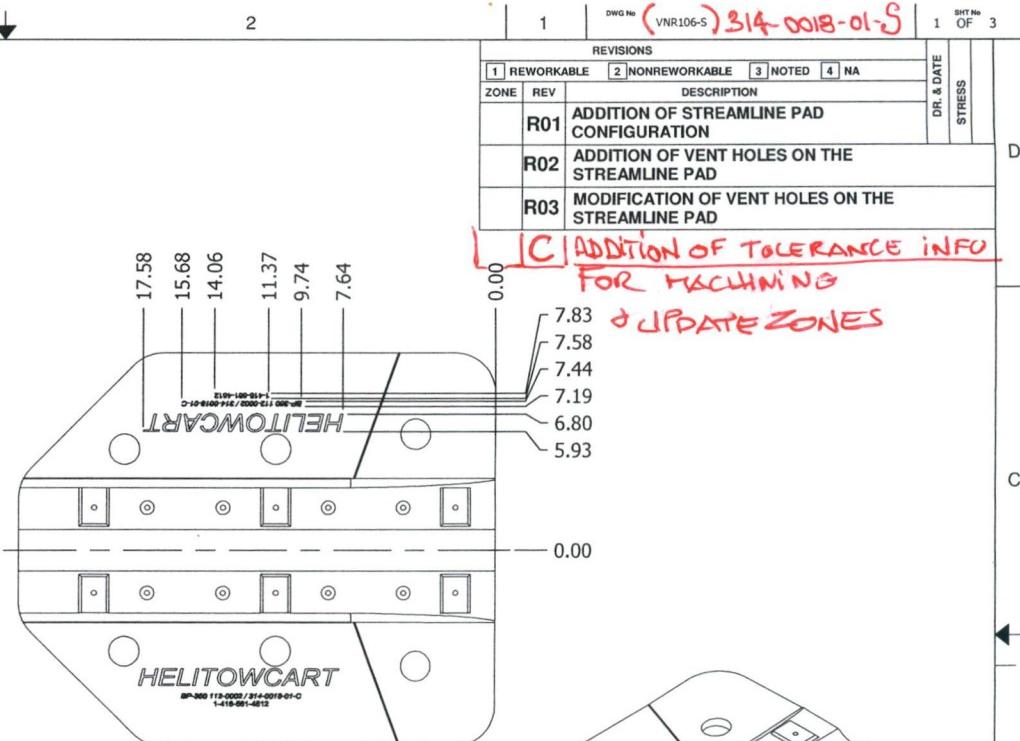
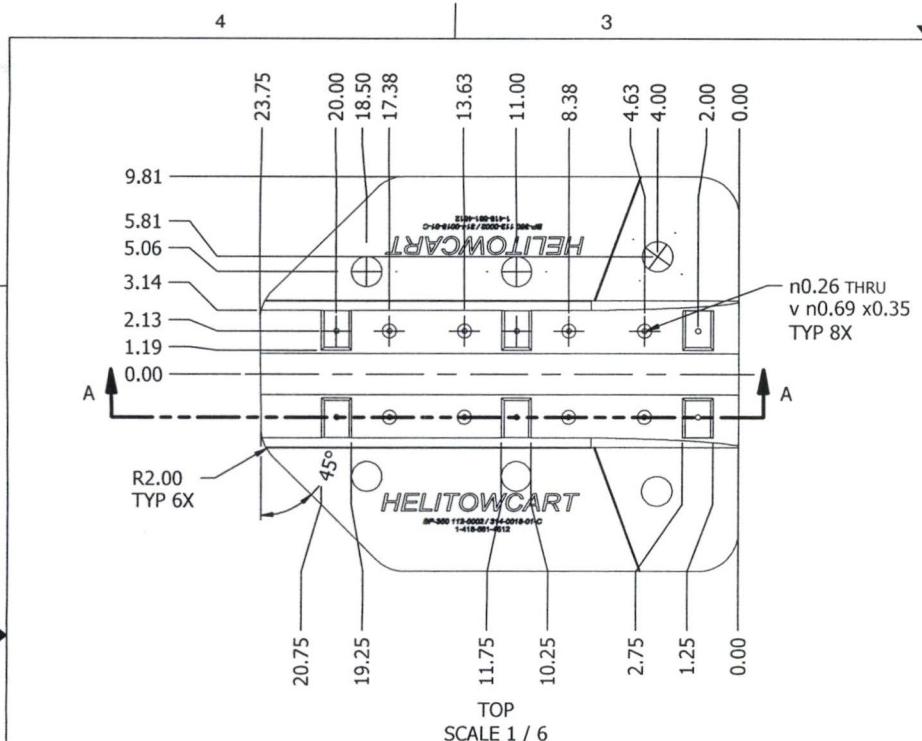
SIZE DRAWING No. REV
B VNR106-S R03

4

6

1

1



ITEM	QTY	PART NUMBER	PAD STREAM LINE		POLYETHYLENE UHMW	BLACK	SIZE
UNLESS OTHERWISE SPECIFIED			DRAWN: S. BERNIER	2008-07-31			
DIMENSIONS ARE IN INCHES.			DESIGNED: S. BERNIER	2008-07-31			
LINEAR TOLERANCES	XX	+0.030	CHECKED:				
	XXX	-0.010					
ANGULAR TOLERANCES: +2°/-0°							
ALL MACHINE SURFACE ✓							
STRESS:							
WEIGHT:							
MATERIAL:							
MATERIAL SPEC:							
SIZE:							
HEAT TREAT:							
PROTECTION:							
IDENTIFYING METHOD:							
DASH NO	NEXT ASSY	QTY PER ACFT	MODEL				

HELITOWCART INC.
5440 Equator, Unit 100-100
Canton, GA 30339
Phone: (404) 961-2212
Fax: (404) 961-2291
www.helitowcart.com

BEARPAW - BP350
PAD STREAMLINE

CAGE CODE: B DRAWING No. B
VNR106-S REV 003

SCALE: NTS CAPTION: VNR106-S DATE SHEET: 1 OF 3

314-0018-01-S

Table 6

314-0018-01-S

Table 5 – Tolerances for Cracks & Wear *OLD MODEL*

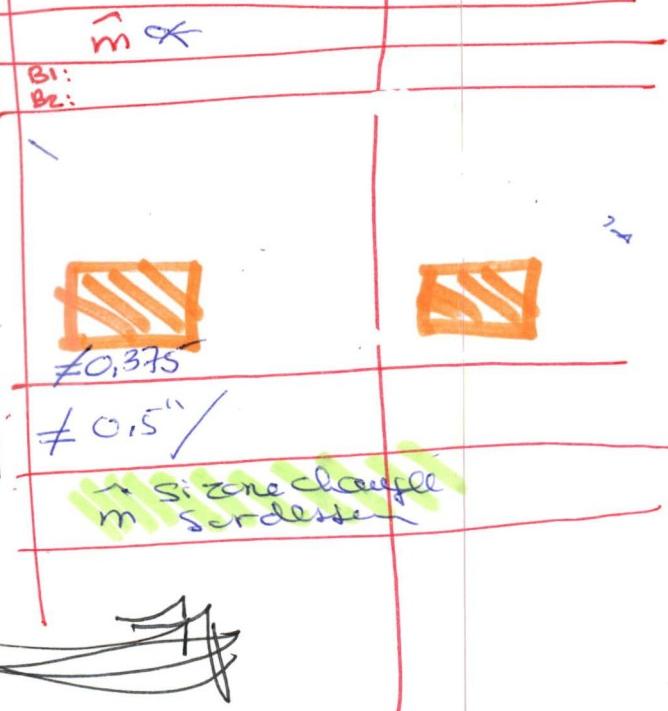
Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	±0,030 -0,050 = 0,27 mm	MIN 0,45" ?
B	1,000	±0,010 -0,250 = 0,35 mm	MIN 0,75"

Pocket	C	D	E
C	0,375	0,50	0,375
	width	None	
	0,075	0,075 = 19 mm	0,075

Pockets: Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.

Stiffeners: NO cracks in stiffeners.

For P/N 112-0002-00-S Only



Zone D: Need to redefine.

Quote no: _____ Date: _____

Date:

Quotation

Submitted to:

Address:

Contact:

Email:

Tel:

Fax:

Shipping mode:

Ship to:

Package Qty:

Weight:

Size:

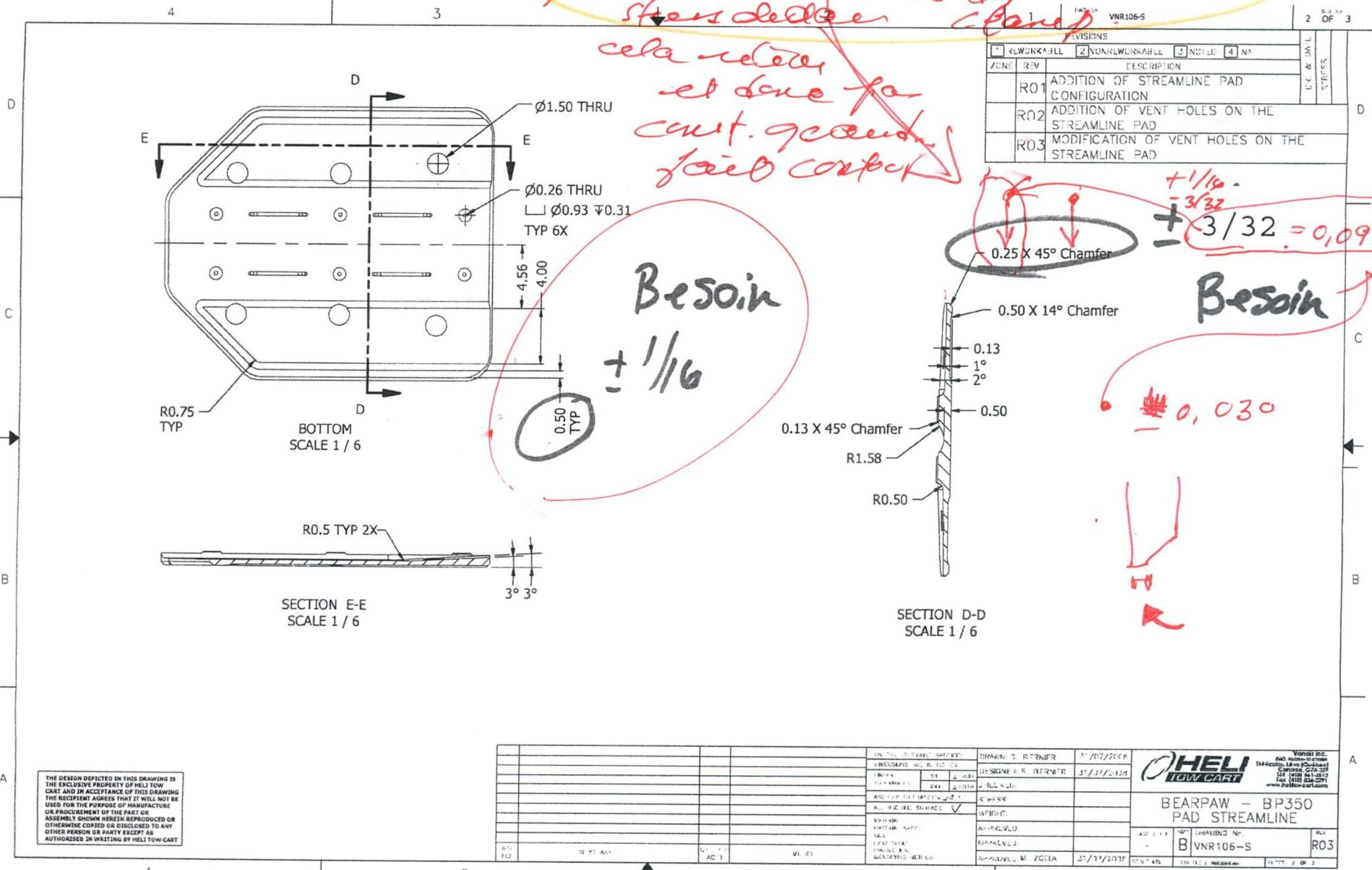


helitowcart.com

Seller: Helitowcart (Vanair inc.)
877A Alphonse-Desrochers
St-Nicolas, Levis,
Quebec, Canada, G7A 5K6

Contact: Nathalie Barbeau
Email: info@helitowcart.com
Tel: +1 418 561 4512
Fax: +1 418 836 4575

- Quotation valid 30 days
 - Full payment required to trigger shipment
 - Warranty 1 year on parts
 - Lead Time: In stock

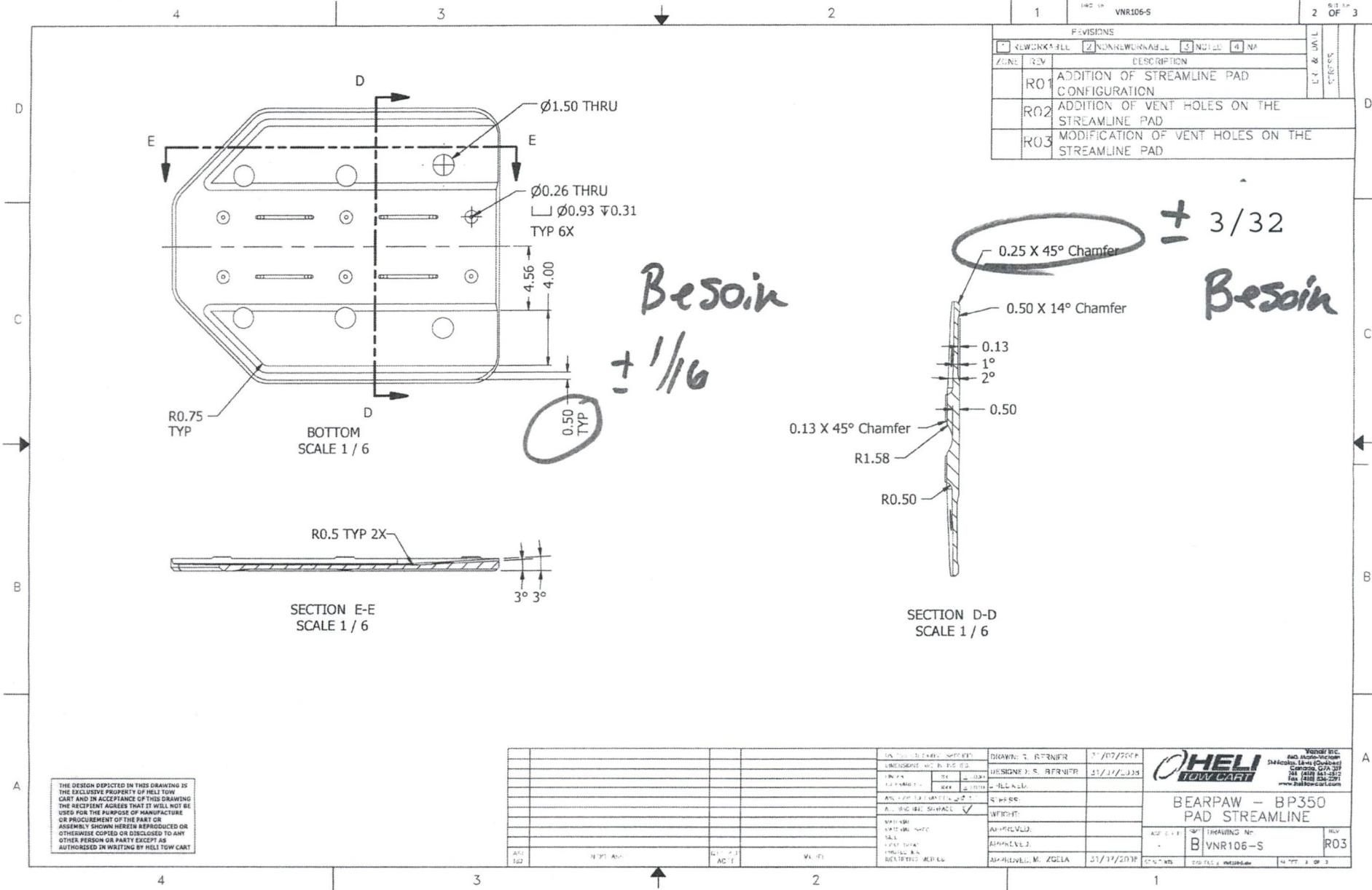


UN. NO. 01000000000000000000000000000000	DRAWN: S. BERNIER	3/07/2006
UNIVERSAL NO. R. V. 00000000000000000000000000000000	DESIGNED: S. BERNIER	3/07/2006
PRINTED: 3/07/2006	REVIEWED:	
EXPIRATION: 2006-03-07	APPROVED:	
ANALYST: S. BERNIER	S. BERNIER	
ANALYST SURFACE: ✓	WEIGHT:	
MANUFACTURER:	WEIGHT:	
MANUFACTURER ADDRESS:	WEIGHT:	
MANUFACTURER CITY:	WEIGHT:	
MANUFACTURER STATE:	WEIGHT:	
MANUFACTURER ZIP CODE:	WEIGHT:	
MANUFACTURER COUNTRY:	WEIGHT:	
MANUFACTURER PHONE NUMBER:	WEIGHT:	
MANUFACTURER FAX NUMBER:	WEIGHT:	
MANUFACTURER E-MAIL:	WEIGHT:	
MANUFACTURER WEB SITE:	WEIGHT:	
MANUFACTURER COMMENTS:	WEIGHT:	
APPROV'D: M. ZOGLA	APPROV'D DATE: 3/07/2006	REV: R03
APPROV'D BY: M. ZOGLA	APPROV'D DATE: 3/07/2006	REV: R03

OHELI
TOW CART
 34440000000000000000000000000000
 800-222-2222
 Fax: 416-534-2271
 www.helitowcart.com

BEARPAW - BP350
PAD STREAMLINE

SECTION E-E DRAWING NO. **B** VNR106-S **R03**



THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORISED IN WRITING BY HELI TOW CART

Quote no:

Date:

Quotation

Submitted to:

Address:

Ship to:



www.helitowcart.com

Contact

Email:

Tel:

Fax:

Contact:

Email:

Tel:

Package Qty:

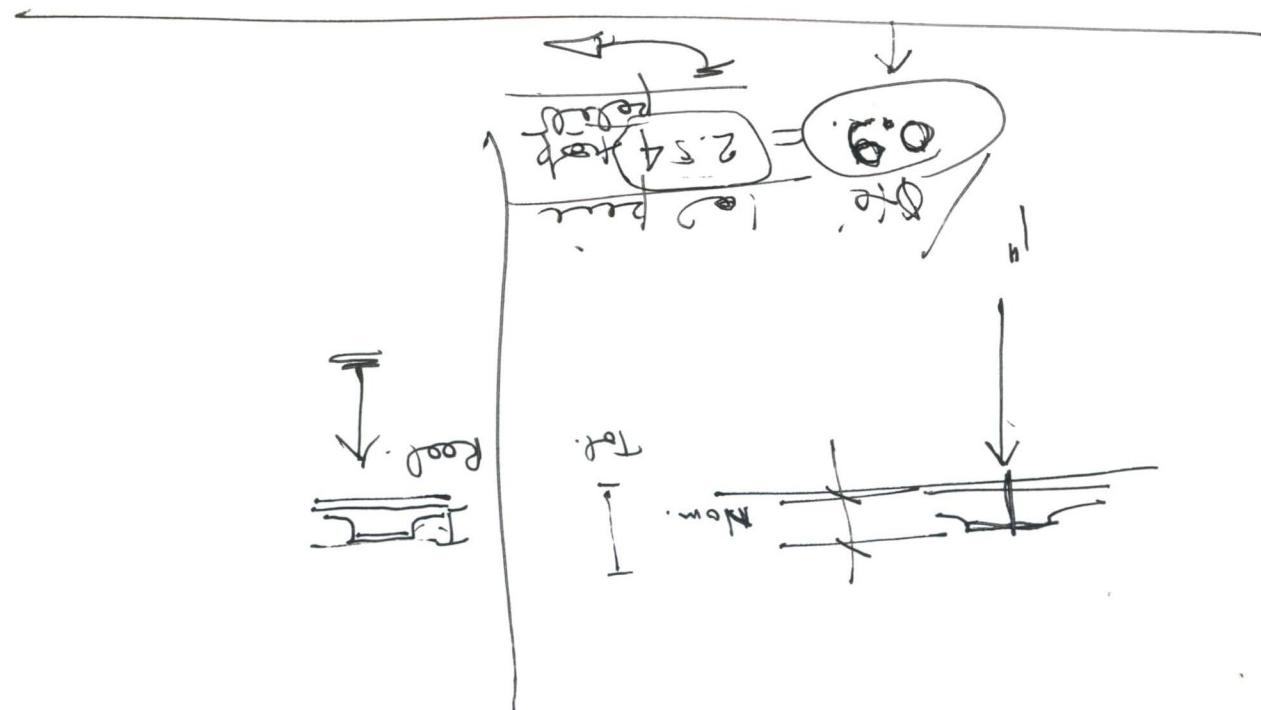
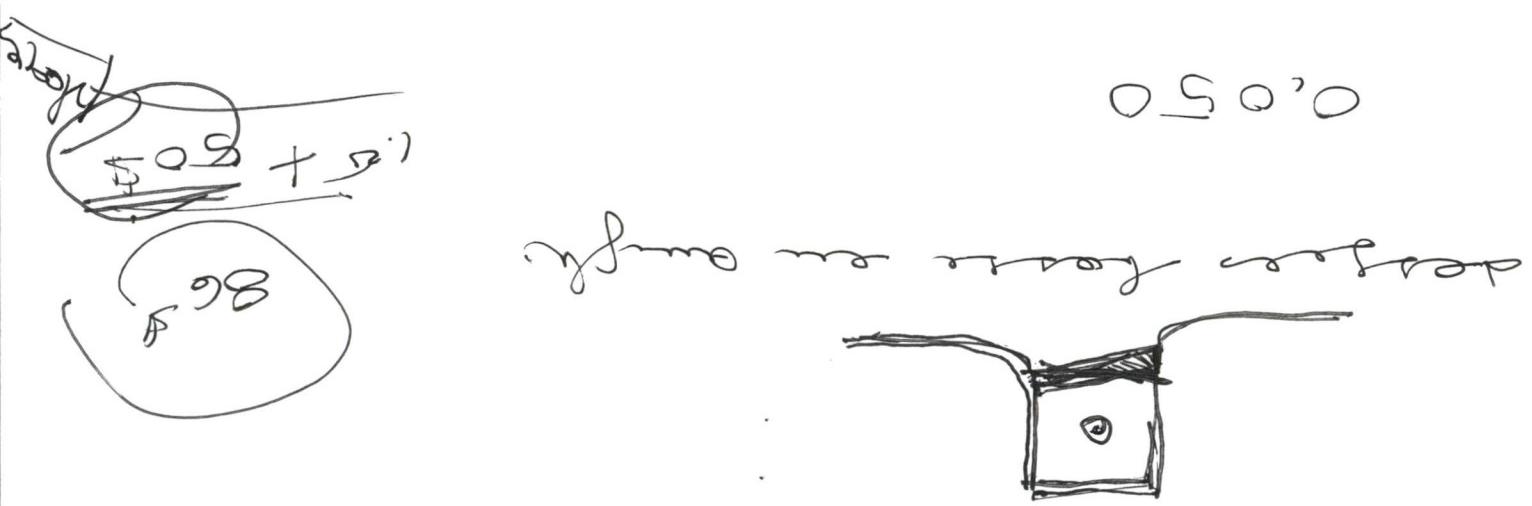
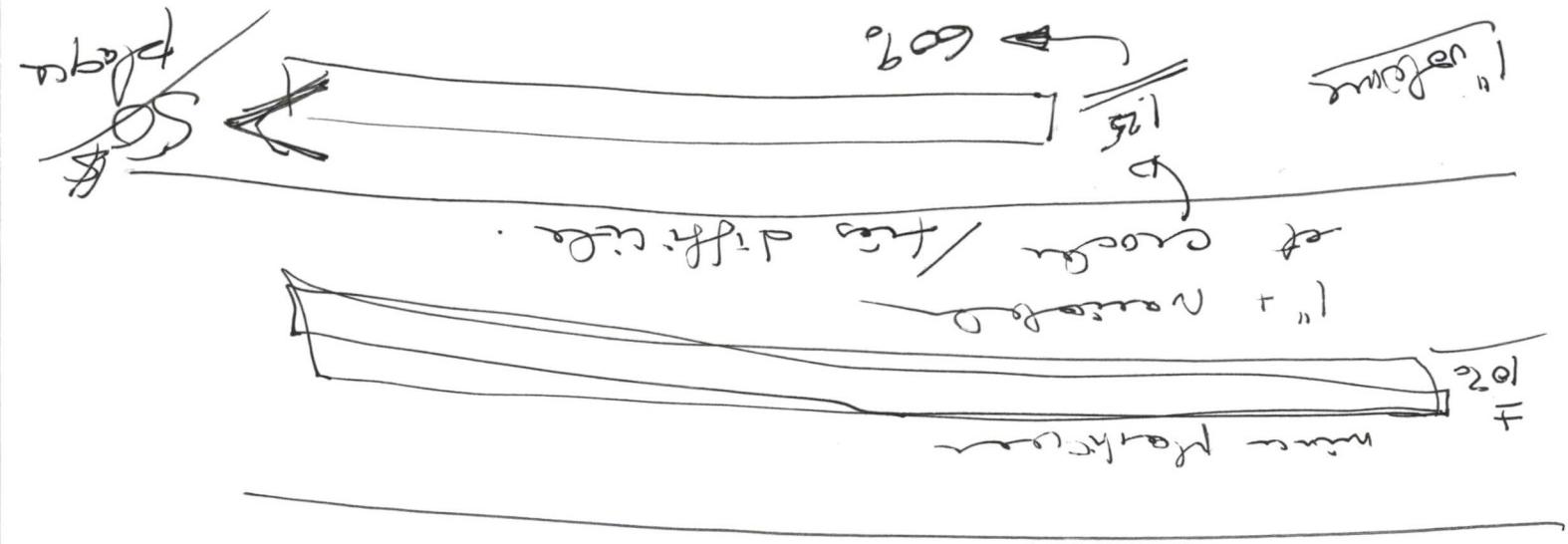
Weight:

Size:

Seller: Helitowcart (Vanair inc.)
877A Alphonse-Desrochers
St-Nicolas, Levis,
Quebec, Canada, G7A 5K6

Contact: Nathalie Barbeau
Email: info@helitowcart.com
Tel: +1 418 561 4512
Fax: +1 418 826 4575

- Quotation valid 30 days
 - Full payment required to trigger shipment
 - Warranty 1 year on parts
 - Lead Time: In stock



NOTES PRELIMINAIRES

Helitowcart - DESIGN CHANGE REQUEST-ORDER (ECR/ECO)	F20-01	Page 1 of 3
Reviewed & approved by:	/	2006 09 09

A- REQUEST

ECR : —

ECO : 5

Nature of proposed change :	BP350 • UPDATE PAD TOLERANCES
Reason :	• UHMW IS DELIVERED TO THEM IN SHEET THAT ARE WARDED TO VARIOUS DEGREES EVEN IF THEY SELECT BEST ONES / NEED TO REVIEW SOME MACHINING TOLERANCES TO ALLOW APP'L OF LARGER %.
Submitted By :	STÉPHANE Poulin, ATEC USINAGE
Date :	DEC 5, 2012

B- IMPACT ANALYSIS

Product Manager	Signature :  /date : 2012 12 05
Operation Manager <i>WA</i>	Signature : _____ /date : _____
Quality System Manager	Signature :  /date : 2012 12 05
Regulatory affairs Manager	Signature :  /date : 2012 12 05
Supplier A <i>WA</i>	Signature : _____ /date : _____
Supplier B <i>WA</i>	Signature : _____ /date : _____
Other <i>WA</i>	Signature : _____ /date : _____

Helitowcart - DESIGN CHANGE REQUEST-ORDER (ECR/ECO)	F20-01	Page 2 of 3
Reviewed & approved by:	/	2006 09 09

C- DECISION

Risk analysis	<ul style="list-style-type: none"> ENSURE THAT IF PAD SPECS ARE MODIFIED WE STILL OFFER A SAFE & HEAVY DUTY PAD & ALLOW STILL A MARGIN FOR NORMAL WEAR TO CUSTOMERS <p> Signature : <u>D. Belanger</u> /date : <u>2012 12 05</u></p>
---------------	--

Decision	<ul style="list-style-type: none"> AFTER CONSULTING ENGINEER AT ATS-AST SERVICES, WE DECIDE TO GO AHEAD WITH MODIFS AS WE FEEL WE CAN MAINTAIN SAFETY & HEAVY DUTY IN ODS. <p> Signature : <u>D. Belanger</u> /date : <u>2012 12 05</u></p>
----------	---

D- ACTION PLAN

Action	Resp	Due date :	Verified by :
<p>(Note: I TAKE THE OPPORTUNITY OF THIS CHANGE ORDER TO REQUEST TO ATS-AST TO TAKE CORRECTIONS OF OTHER VARIOUS NATURE THAT HAVE IDENTIFIED OVER TIME. ALL ARE MISTAKES IN TYPO NATURE. NONE IS SPEC CHANGE)</p>			
1- SEND LIST OF REQUESTED MODIFS TO SIMON BERANGER	NB	DEC 12	P.B → Date Decil.
2- GET LIST OF EXACT NEED FROM NB	"	"	"
3- DET. WITH ATS-AST NEW TOL.	NB	DEC 21	P.B
4- GET APP'L FROM MIRKO	NB	FEB 01/13	NB
5- ISSUE CHANGE TO ATREC	NB	FEB 01/13	NB

Effective date :	2012 02 09	Effective lot no :	BP350 - PADS LN-121212 -01
------------------	------------	--------------------	-------------------------------

BP350 - FINISH PROD:
HTC - LNF - 1302 02 - 01

Helitowcart - DESIGN CHANGE REQUEST-ORDER (ECR/ECO)	F20-01	Page 3 of 3
Reviewed & approved by:	/	2006 09 09

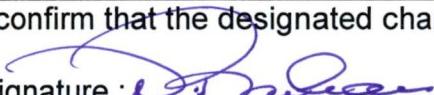
E- VERIFICATION

Verified Elements :	By/ date :
1- ALL CHANGES REQUESTED REVIEWED	DB / FEB 9, 2013
APPROVED	

F- VALIDATION

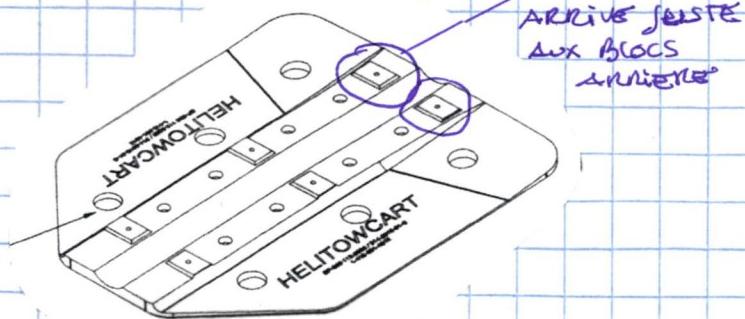
Validated Elements :	By/ date :

G- CLOSURE

I confirm that the designated change has been performed successfully :
Signature :  /date : 

① TOL. FAB. À ÉLARGIR

A)



DIFFICULTÉ À MINT. TOL DE $1'' \pm 0.1 = \text{MIN } 0.9$
CAR 1'' EST ÉPAISSEUR DE LA FEUILLE BRUTE.

PUISQUE FEUILLE BRUTE EST TORDE À LA RÉCEPTION DU
FABRICANT DE UHMW, ILS FONT MACHINAGE ET
MANQUENT DE MATERIEL DANS CETTE ZONE UN
PLUS ÉPAISSE.

B) Nouv. Distrib.

SUGGÉRÉE À RETENIR:

TOL FAB

$1'' \pm \frac{1}{16}$ i.e. ± 0.063 .
= MIN. 0.937 ÉPAISS. AU PLATEAU
DE FIXATION DES H-CLIPS ARRIÈRES

TOL USURE Pour Client:

$1'' - 0.25$ i.e. $- \frac{1}{4}''$
= MIN 0.750 ÉPAISS. AU PLATEAU

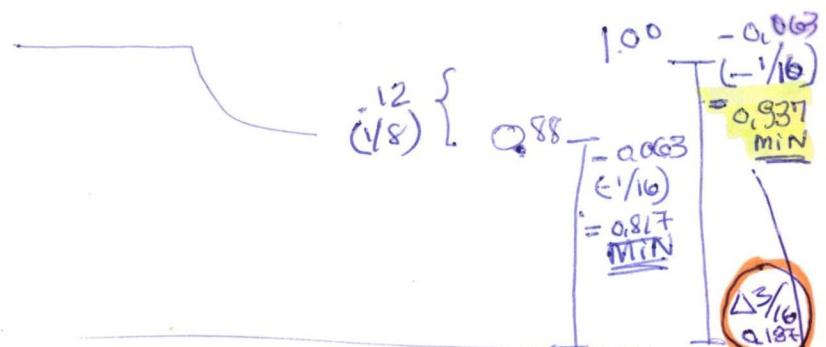
$1''$



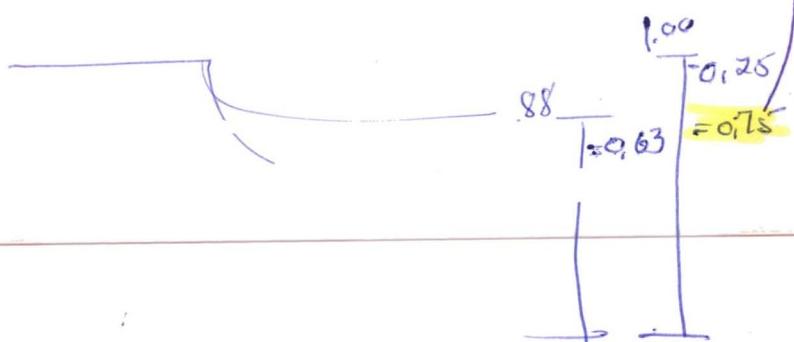
BP350-S

NEW

TOL. FAB



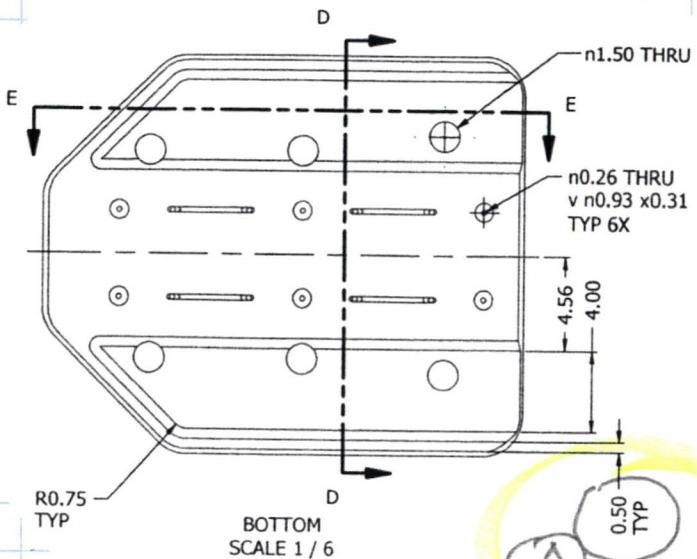
TOL. USURE



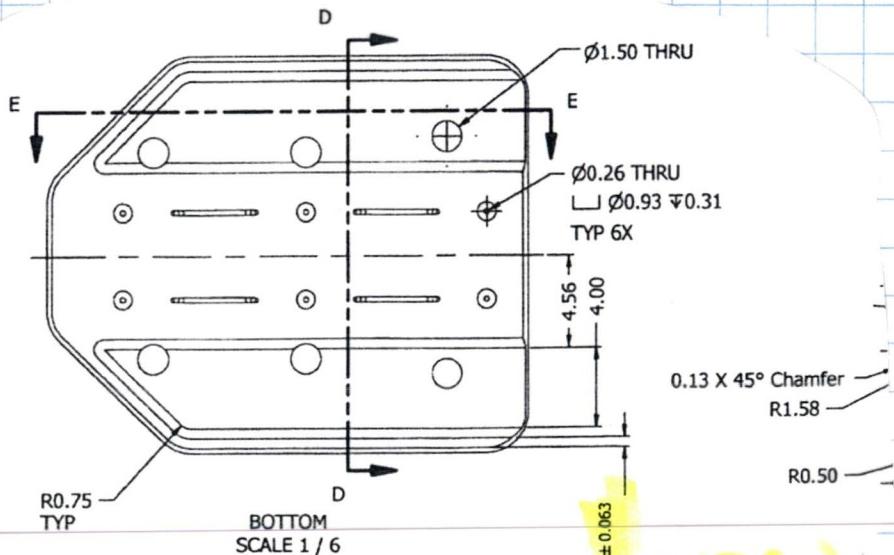
c) TOL. DE LARGEUR DE BORNOURE DIFFICILE À TENIR
AU MACHINAGE. SUP ↑ TOL.

V.P. SUIVANTES DE: 0.5 TYP
A: 0.5 ± 0.003 ou $\frac{1}{16}$

Dé-



2:



NEW

② TOL. FAB à CLARIFIER

A) STÉPH. ROULIN DEMANDE D'AUTRES AJOUTS D'INFO
POUR SAVER SON PERSONNEL D'USINE

(voir NOTES P. SUIVANTES)

4

(2)

2

1

OF 3

D

C

B

1

This technical drawing shows a top-down view of a rectangular metal component. The component has a central vertical slot and several circular holes. Dimension lines indicate various measurements: a width of 1.50 inches through a hole at the top center; a height of 0.26 inches through a hole on the right side; a width of 0.93 inches with a tolerance of 0.31 inches for a slot near the bottom right; and a height of 4.00 inches from the bottom edge to a top edge. A thickness of 0.13 inches is shown on the right side. A radius of R0.75 is indicated at the bottom left corner. The bottom scale is 1/6. Reference letters D and E are used to mark specific points on the top and bottom edges.

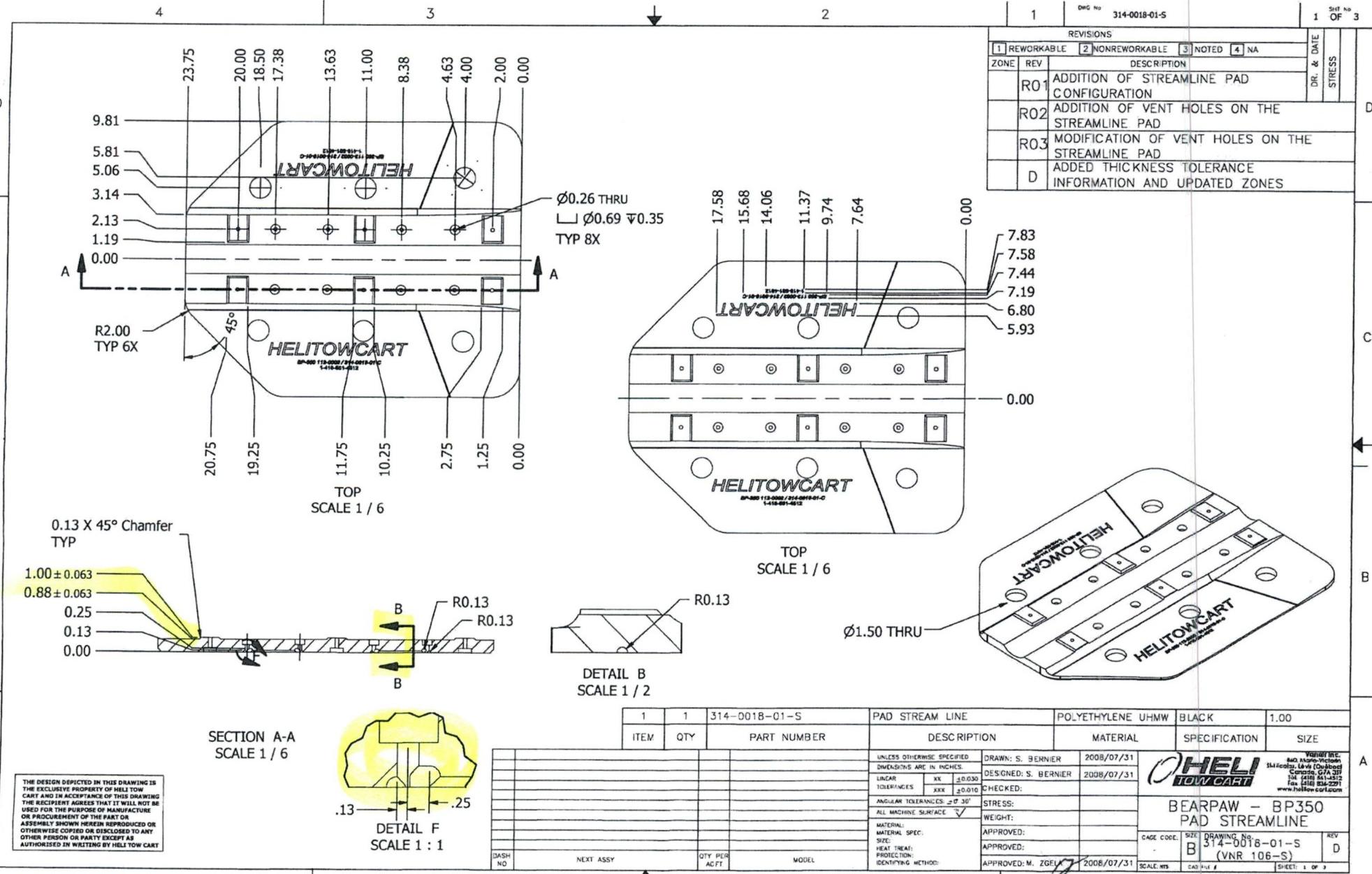
A technical drawing of a vertical slot. The top edge has a dimension of "0.13 X 45° Chamfer" with arrows pointing to the top-left and top-right corners. Below that is a dimension of "R1.58" with an arrow pointing to the left corner. The bottom edge has a dimension of "R0.50" with an arrow pointing to the left corner. To the right of the bottom edge, two horizontal dimension lines extend to the right, each ending in a leader line that points to a value: "(.348)" above and "(.273)" below.

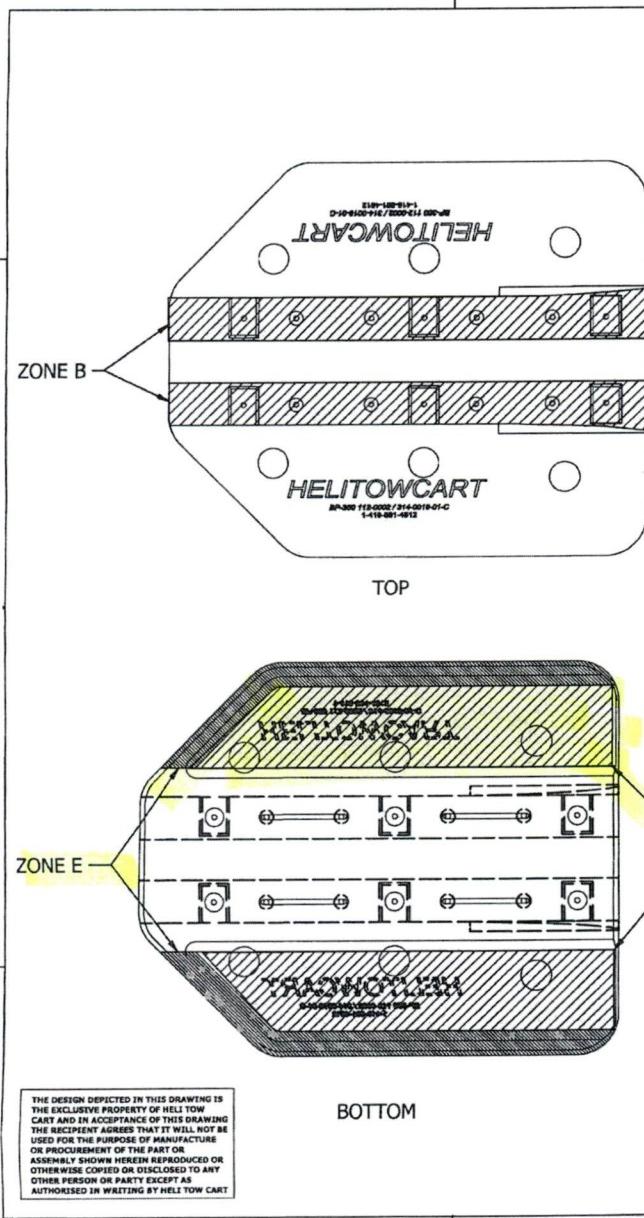
SECTION D-D
SCALE 1 / 6

A technical line drawing of a corner section. The top edge is labeled ".25±.09 X 45° Chamfer". The bottom edge is labeled ".50 X 14° Chamfer". The drawing shows a vertical wall on the left and a horizontal base on the right.

DETAIL G
SCALE 1 : 1

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CART AND IN ACCEPTANCE OF THIS DRAWING
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OR PROCUREMENT OF THE PART OR
ASSEMBLY SHOWN HEREIN REPRODUCED OR
OTHERWISE COPIED OR DISCLOSED TO ANY
OTHER PERSON OR PARTY EXCEPT AS
AUTHORISED IN WRITING BY HELI TOW CART**





DASH NO	NEXT ASSY	QTY PER ACTT	MODEL	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.	DRAWN: S. BERNIER 2008/07/31	DESIGNED: S. BERNIER 2008/07/31	Vendor Inc. SAIC Helitow Cart Contractor C-074-01 1-110-001-0012 Fax: (416) 834-2251 www.helitowcart.com
				LINEAR TOLERANCES XX ±0.030 XXX ±0.010			
				ANGULAR TOLERANCES: ±0° 30'	CHECKED:		
				ALL MACHINE SURFACE ✓	STRESS:		
					WEIGHT:		
					APPROVED:		
					APPROVED:		
					APPROVED:		
					APPROVED: M. ZGELA 2008/07/31		
						SCALE: 1/16	SHEET: 3 OF 3

CODE CODE: B DRAWING NO: 314-0018-01-S REV: D
BEARPAW - BP350 PAD STREAMLINE
DATE: 07/31/2008

③ CORRECTIONS DIVERSES SUR DOCUMENTS

A) "314-0020-00-E" REV F

LES-AST OUT FAIT ERREUR VS STC CAR NO DE
VERSION DU NO DE PIECE A ÉTÉ ENREGISTRÉ
COMME EXISTANT PART DU NO DE PIECE.
DONC SI ON VEUT PAS VOIR À FAIRE MAJ
DU STC, FAUT VIRE MEC ET FAUT AJOUTER
UNE VERSION.

DESSUSAIT DU DOVIR:

314-0020-00 REV. E → 314-0020-00-REV F

Mais on voit

314-0020-00-E REV. F

OK./DR

Nathalie Barbeau

From: Nathalie Barbeau [nbarbeau@helitowcart.com]
Sent: December-14-12 3:37 PM
To: 'Simon Bernier'
Subject: RE: BP350 changement
Ok.....

Nathalie Barbeau
VP Commercial Affairs

Helitowcart (Vanair inc.)
877A Alphonse-Desrochers
St-Nicolas, Levis, Qc
Canada, G7A 5K6
Tel: +1.418.561.4512
Fx : +1.418.836.4575
nbarbeau@helitowcart.com
info@helitowcart.com
www.helitowcart.com

From: Simon Bernier [mailto:simonb@ats-ast.com]
Sent: December-14-12 3:30 PM
To: Nathalie Barbeau
Cc: Jean-Francois Lemire
Subject: BP350 changement

Salut Nathalie -
Désolé pour le délais,

Sur le STC le document d'installation est 314-0020-00-E, si nous passons le document en révision F il doit s'appeler 314-0020-00-E quand même, car si on change le numéro de document on doit refaire un STC et c'est plus coûteux.
Le document serait donc 314-0020-00-E Rev F.

Appelez-moi si vous avez des questions. Si vous êtes d'accord avec cette solution nous transmettrons la soumission.

Merci

Simon Bernier, ing.
Structure Specialist / Spécialiste de Structure
E-Mail : simonb@ats-ast.com
Aviatech Services Techniques Inc.
3005 rue Lindbergh, Trois-Rivières, QC, G9A 5E1
Tel: (819)601-8049 (Ext: 1104)
Fax: (819)377-7928



Transports Canada

Transport Canada

Aircraft Certification - NAI
700, Leigh Capreol Street
Dorval (Québec)
H4Y 1G7

July 7, 2011

Notre référence - Our file
NAI 5012-06-0092

Mr. Mirko Zgela
4100, Renoir
Trois-Rivières, Québec
G8Y 6Y6

SUBJECT: Transmittal of Supplemental Type Certificate (STC) No.: **SH06-24**
Issue No.: **3**
Approval Date: **August 17, 2006**
Issue Date: **July 7, 2011**

Mr. Zgela,

The subject Supplemental Type Certificate (STC) document is issued in response to your application dated February 17, 2011 for the **Installation of Helitowcart BearPaw**.

Please ensure to inform the holder of this certificate that he should comply with all requirements stated in CAR part V, subpart 21, Division VIII - *Responsibilities of a Design Approval Document Holder*.

Parts manufacturing that may be covered under this certificate are either regulated under CAR Part V, Subpart 61 or under CAR part V subpart 71, § 571.06(4).

Yours truly,



Jean-Pierre Francoeur
Senior Engineer
Aircraft Certification
For Minister of Transport

Encl.

Canada

*Department of Transport*

Supplemental Type Certificate

This approval is issued to:

Helitowcart Inc.
860 Marie-Victorin
St-Nicholas, Lévis, Québec
Canada G7A 3S9

Number: SH06-24

Issue No.: 3

Approval Date: August 17, 2006

Issue Date: July 7, 2011

Responsible Office:

Québec

Aircraft/Engine Type or Model:

See Continuation Sheet Page 2 of 2

Canadian Type Certificate or Equivalent:

See Continuation Sheet Page 2 of 2

Description of Type Design Change:

Installation of Helitowcart BearPaw

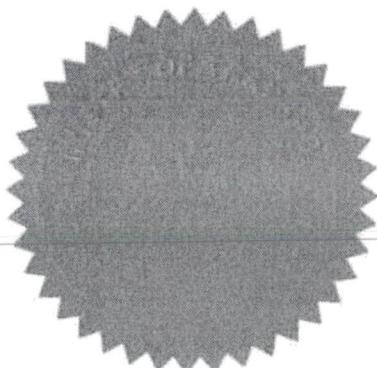
**Installation/Operating Data,
Required Equipment and Limitations:**

For the Robinson Models R44 and R44 II Helicopters:

Installation of Helitowcart Bear Paw BP44 is to be performed in accordance with TC approved Helitowcart Inc. Master Document List, Report: HTC-MDL-BP-R44-1000, Revision C dated April 15, 2010, or later Transport Canada approved revision.

The BearPaw must be installed in accordance with Helitowcart Inc. Installation Instructions Document: "HTC-314-0011-00-D, BearPaw Model BP44, Installation Instructions - R44".

See Continuation Sheet Page 2 of 2



Conditions: This approval is only applicable to the type/model of aeronautical product specified therein. Prior to incorporating this modification, the installer shall establish that the interrelationship between this change and any other modification(s) incorporated will not adversely affect the airworthiness of the modified product.



Jean-Pierre Francoeur
For Minister of Transport

Canada

*(Continuation Sheet)*

Number: SH06-24 Issue 3

NOTE: THIS ADDENDUM SHALL REMAIN PART OF THE CERTIFICATE REFERRED TO THEREIN.**Installation/Operating Data,
Required Equipment and Limitations (Cont'd):****For the Eurocopter (formerly Aerospatiale) AS350 and AS355 Series Helicopters:**

Installation of Helitowcart Bear Paw BP350 is to be performed in accordance with TC approved Helitowcart Inc. Master Document List, Report: HTC-MDL-BP-AS350/355-1000, Revision F dated April 8, 2010, or later Transport Canada approved revision.

The BearPaw must be installed in accordance with Helitowcart Inc. Installation Instructions Document: "HTC-314-0020-00-E, BearPaw Model BP350, Installation Instructions - AS350/355".

For the Eurocopter EC 130 Helicopters:

Installation of Helitowcart Bear Paw BP130 is to be performed in accordance with TC approved Helitowcart Inc. Master Document List, Report: HTC-MDL-BP-EC130-1000, Revision A dated May 13, 2011, or later Transport Canada approved revision.

The BearPaw must be installed in accordance with Helitowcart Inc. Installation Instructions Document: "HTC-314-0031-00-A, BearPaw Model BP130, Installation Instructions - EC 130".

Fleet Eligibility List

Make	Model	Type Certificate Data Sheet
Robinson	R44	H-97
Robinson	R44 II	H-97
Eurocopter	AS 350 B	H-83
Eurocopter	AS 350 B1	H-83
Eurocopter	AS 350 B2	H-83
Eurocopter	AS 350 B3	H-83
Eurocopter	AS 350 BA	H-83
Eurocopter	AS 350 D	H-83
Eurocopter	EC 130 B4	H-83
Eurocopter	AS 355 E	H-87
Eurocopter	AS 355 F	H-87
Eurocopter	AS 355 F1	H-87
Eurocopter	AS 355 F2	H-87
Eurocopter	AS 355 N	H-87

— End —

3)

B) uniformisation d'IDT DES NO DE DESSIN
DES NOUS DEVRAIENT ETRE DES 314-_____
ET ON A DES "VNR..."

Raison: DESSINS FAITS PAR SOUS-TRAITANTS
AU DEBUT ET IDT PANSI. ATTAQUE AVANT
PRIS CES IDENTIFIANTS.

JE VEUX CORRIGER MAIS EVITER CONFUSION

ON AYAIT:

ex: VNR106

ON AURA:

314-008-01 (VNR106)

MISE EN PLACE L'ENSEMBLE DU KIT DE
DOCUMENTS UNE FOIS POUR TOUTES!



1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355-1000	Compliance Plan – Eurocopter Model AS350/355 Series Helicopters – Installation of BearPaw Model BP350	NC	DAR 310	Nov 22, 2006
HTC-314-0020-00	BearPaw Model BP350 – Installation Instructions – AS350/355 Series Helicopters	E F	DAR 310	April 8, 2010 NEW DATE
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	A	DAR 310	July 31, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	A	DAR 310	July 31, 2008

2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
112-0002-00-S	BearPaw BP350 – Assembly Streamline	C D	DAR 310	July 31, 2008 NEW DATE
(VNR084) 314-0002-15	BearPaw – Iceblade	A (R01)	DAR 310	Apr 24, 2006
(VNR085) 314-0004-15	BearPaw – Iceblade Threaded Rod	A (R01)	DAR 310	Apr 24, 2006
(VNR086) 314-0005-15	BearPaw – Iceblade Assembly	A (R01)	DAR 310	Apr 24, 2006
(VNR106) 314-0018-01	BearPaw BP350 - Pad	B (R02)	DAR 310	Sept 26, 2006
(VNR106-S) 314-0018-01	BearPaw BP350 – Pad Streamline	F R03 D	DAR 310	July 31, 2008 NEW DATE
(VNR107) 314-0019-15	BearPaw BP350 – U Shaped Clip	A (R01)	DAR 310	Sept 29, 2006
(VNR089) 314-0007-15	Bearpaw – Slotted Clip Support	B (R04)	DAR 310	July 31, 2006
(VNR099) 314-0012-01	Filler Block 1/4"	A (R01)	DAR 310	Aug 8, 2006

Mettre en petit caractère entre parenthèses après le numéro de dessin et la révision Alphabétique.

ENLEVER RO3, SEUL. LETTRE

Master Document List

Helitowcart

Eurocopter Model AS 350/355 Series Helicopters Installation of BearPaw Model BP350

Report: HTC-MDL-BP-AS350/355-1000 (Rev G)

APPROVED BY:



DATE: DECEMBER 21, 2012

Mirko Zgela
Design Approval Representative DAR #310

Revision	Revision Date	Revision of Entry	Entered by
A	Nov 22, 2006	Initial issue	N/A
B	Jan 28, 2007	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
C	Feb 28, 2007	Addition of streamline pad configuration. Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
D	July 27, 2008	Addition of vents holes in the streamline pad.	M.Z.
E	Aug 01, 2008	Modification of vents holes in the streamline pad.	M.Z.
F	April 8, 2010	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
G	December 21, 2012	Updated Tolerance data regarding Pad and Updated referenced document identification and revisions	M.Z.

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1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355-1000	Compliance Plan – Eurocopter Model AS350/355 Series Helicopters – Installation of BearPaw Model BP350	NC	DAR 310	Nov 22, 2006
HTC-314-0020-00-E	BearPaw Model BP350 – Installation Instruction – AS350/355 Series Helicopters	F	DAR 310	Dec 21, 2012
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	A	DAR 310	July 31, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	A	DAR 310	July 31, 2008

2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
112-0002-00-S	BearPaw BP350 – Assembly Streamline	D	DAR 310	Dec 21, 2012
314-0002-15 (VNR084)	BearPaw – Iceblade	A (R01)	DAR 310	Apr 24, 2006
314-0004-15 (VNR085)	BearPaw – Iceblade Threaded Rod	A (R01)	DAR 310	Apr 24, 2006
314-0005-15 (VNR086)	BearPaw – Iceblade Assembly	A (R01)	DAR 310	Apr 24, 2006
314-0007-15 (VNR089)	Bearpaw – Slotted Clip Support	B (R04)	DAR 310	July 31, 2006
314-0012-01 (VNR099)	Filler Block ¼"	A (R01)	DAR 310	Aug 8, 2006
314-0018-01 (VNR106)	BearPaw BP350 - Pad	B (R02)	DAR 310	Sept 26, 2006
314-0018-01-S (VNR106-S)	BearPaw BP350 – Pad Streamline	D	DAR 310	Dec 21, 2012
314-0019-15 (VNR107)	BearPaw BP350 – U Shaped Clip	A (R01)	DAR 310	Sept 29, 2006



BY VANAIR

HTC-MDL-BP-AS350/355-1000_Rev G

3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01	Material Properties - UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05	Heat Shrink Specifications	A	N/A	Sept 6, 2006

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Overhaul Requirements	p.9
REVISIONS & APPROVAL	p.10
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Annex B (BearPaw Pad Drawing)	



200209
Steve Pawlak

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314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw Model BP 350 (P/N 112-0002-00 or P/N 112-0002-00-S) for the AS 350 and AS 355 series helicopters.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance when installed on your helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-4575 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following helicopter models:

Table 2 – Helicopter Model Effectivity

Make	Model	Transport Canada Type Certificate Data Sheet
Eurocopter	AS 350 D	H-83
Eurocopter	AS 350 D1	
Eurocopter	AS 350 B	
Eurocopter	AS 350 B1	
Eurocopter	AS 350 B2	
Eurocopter	AS 350 B3	
Eurocopter	AS 350 BA	
Eurocopter	AS 355 E	
Eurocopter	AS 355 F	
Eurocopter	AS 355 F1	
Eurocopter	AS 355 F2	H-87
Eurocopter	AS 355 N	

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**314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355**

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION

BearPaw Installation

Reference Documentation:

- [1] Helicopter Maintenance Manual AS 350 or AS 355 as applicable.

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] as applicable to your helicopter model to allow a ground clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the skid tube wear shoes.

Step 2: IceBlade Installation

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the IceBlades

- With IceBlade Option
- Install ice blades (Qty: 4) (Iceblades P/N 314-0005-15) under BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A.
- Secure ice blades with washer (Washer P/N 263-0001-17) and nut (P/N 262-0001-17).

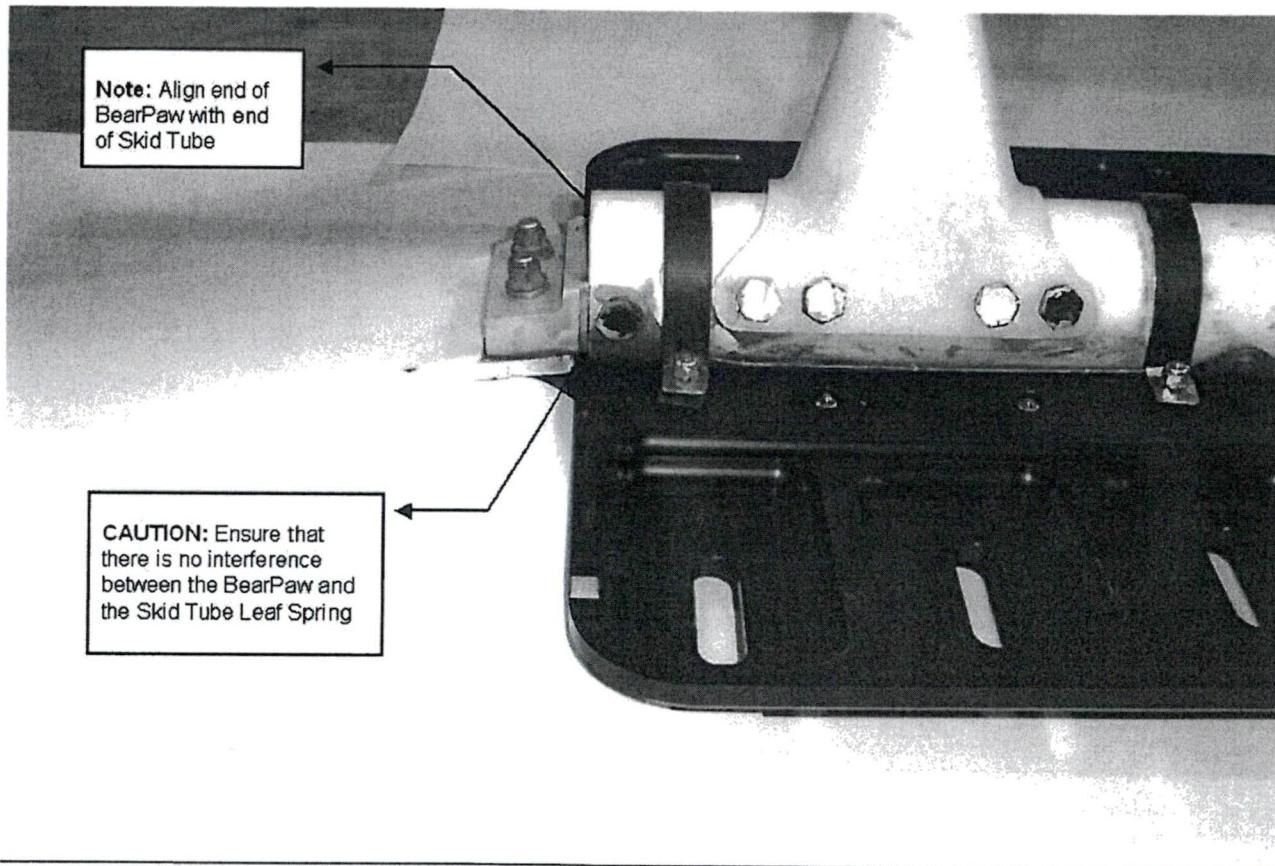
Step 3: BearPaw Installation

- Position the BearPaw under the skid as shown in Figure 1 with narrow edge pointing forward.
- Insert washers (P/N 263-0001-17) through all six bolts: 6x(261-0001-17);
- Insert bolts (P/N 261-0001-17) and washer (Washer P/N 263-0001-17) through BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;
- Insert filler blocks (P/N314-0012-01) as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;

Note: The use of filler blocks (P/N314-0012-01) may be replaced or complemented by the use of washers (P/N 263-0001-17) to fill in the gap. Bolts (P/N 261-0001-17) may be replaced by longer or shorter AN4 bolts as required.

- Insert both U-shaped clips (P/N 314-0019-15) through bolts: 6x(261-0001-17);
- Insert slotted clip supports (P/N 314-0007-15) through all six bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 – BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) - Alignment on Skid





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BearPaw Model BP350
Installation Instructions – AS350/355

BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), slotted clip support (P/N 314-0007-15) on U-shaped clips (P/N 314-0019-15);
- Remove washers (P/N 263-0001-17), U-shaped clips (P/N 314-0019-15), filler blocks (P/N 314-0012-01), and remove BearPaw pad (P/N 314-0018-01) or (P/N 314-0018-01-S Streamline);
- Inspect skid tubes to confirm serviceability
- If the skid tube shoes have been removed, re-install shoes as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required using data provided in Table 3.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP350 (P/N 112-0002-00)	19,9 Lb 9,0 Kg	N/A	N/A	159,4 in. 404.9 cm	3172.0 in-lb 36.44 m-kg
Helitowcart BearPaw Model BP350 - <u>Streamline</u> (P/N 112-0002-00-S)	18,3 Lb 8,5 Kg	N/A	N/A	159,4 in. 404.9 cm	2917.0 in-lb 34.41 m-kg

Note: Weight and moment provided are for full kit installation.



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BearPaw Model BP350
Installation Instructions – AS350/355

Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part / Dwg No.	Additional Drawing Reference No./ Name
BearPaw Model BP350	1	112-0002-00	112-0002-00 / BearPaw Assembly, or 112-0002-00-S /Bear Paw Streamline Assembly
BearPaw pad ⁽¹⁾	1	314-0018-01	BearPaw BP350 – Pad (VNR106)
BearPaw pad streamline ⁽¹⁾	1	314-0018-01S	BearPaw BP350 – Pad Streamline (VNR106-S)
U Shaped Clips	3	314-0019-15	BearPaw BP350 - U Shaped Clips (VNR107)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks 1/4"	6	314-0012-01	BearPaw – Filler block $\frac{1}{4}$ " (VNR099)
Bolts	6	261-0001-17	Bolt- AN4-14
Nuts	6	262-0001-17	Nut- MS20365-428
Washers	12	263-0001-17	Washer – AN960-416
Shrink	3	314-0021-01	BearPaw – Shrink Specifications & Install.(1"x6.25")
IceBlade Option Model OIB	4	314-0005-15	IceBlade Assembly (VNR086)
Nuts	8	262-0001-17	Nut- MS20365-428
Washers	8	263-0001-17	Washer – AN960-416

Note (1): Use pocked shaped BearPaw Pad P/N 314-0018-01 for assembly P/N 112-0002-00. Use streamlined Pad P/N 314-0018-01-S for assembly P/N 112-0002-00-S as applicable.



314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355

INSPECTION

Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:
Tables 5 & 6 – Tolerances for cracks & wear and
Annex B – BearPaw Allowable Damage Drawing 314-0018-01 (VNR-106) page 2 of 2 for Pocket pad
or 314-0018-01-S (VNR106-S) page 3 of 3 for Streamlined Pad.

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 500 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the helicopter landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 500 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

500 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:
Tables 5 & 6 – Tolerances for cracks & wear and
Annex B – BearPaw Allowable Damage Drawing 314-0018-01 (VNR-106) page 2 of 2 for Pocket pad
or 314-0018-01-S (VNR106-S) page 3 of 3 for Streamlined Pad.



314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355

Table 5 – Tolerances for Cracks & Wear / Pocket Pad 314-0018-01 (VNR 106)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,50	0,050	<u>Stiffeners:</u> NO cracks in stiffeners.

Table 6 – Tolerances for Cracks & Wear / Streamline Pad 314-0018-01-S (VNR 106-S)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000; and 0,88	0,250	
C	0,273 to 0,348 (variable thickness)	0,075	<u>Pockets:</u> Cracks are acceptable in the pocket under the Helitowcart BearPaw to a maximum length of 0,5". Stop drill cracks with a 0,125" hole.
D	0,49 (thickness after radius)	0,075	No cracks in the radius
E	0,38	0,075	No cracks in the BearPaw contour

Overhaul Requirements

- Not applicable for the designated application of this device.

REVISIONS & APPROVAL

Revisions

Date	Rev	Nature of Revisions
Nov 20, 2006	A	Initial issue
Jan 29, 2007	B	Minor editorials. Change to weight & Balance Data to reflect production model. Change in inspection schedule from 300 to 500 hours to match existing landing gear periodicity.
Feb 28, 2008	C	Introduction of new streamline BearPaw Pad configuration as alternate.
Aug 01, 2008	D	Modification of vent holes on the streamline pad
April 8, 2010	E	Correction to C of G data
December 21, 2012	F	Updated Pad Tolerances and Document identifications . Improved page set up for reader convenience.

Approval

Internal Approval :		
Helitowcart inc.		Date: Dec 21, 2012
Lucien Barbeau, President		
External Approval :		
Transport Canada		Date: Dec 21, 2012
Mirko Zgela, DAR #310		

Annex A

See: BearPaw Assembly, drawing no. (112-0002-00) for Pocket style pad or;
BearPaw Assembly, drawing no. (112-0002-00-S) for Streamline style pad

Annex B

See: BearPaw Pad, drawing no. 314-0018-01 (VNR106) page 2 of 2 for Pocket style pad or;
BearPaw Pad, drawing no. 314-0018-01-S (VNR106-S) page 3 of 3 for Streamline style pad.



BY VANAIR

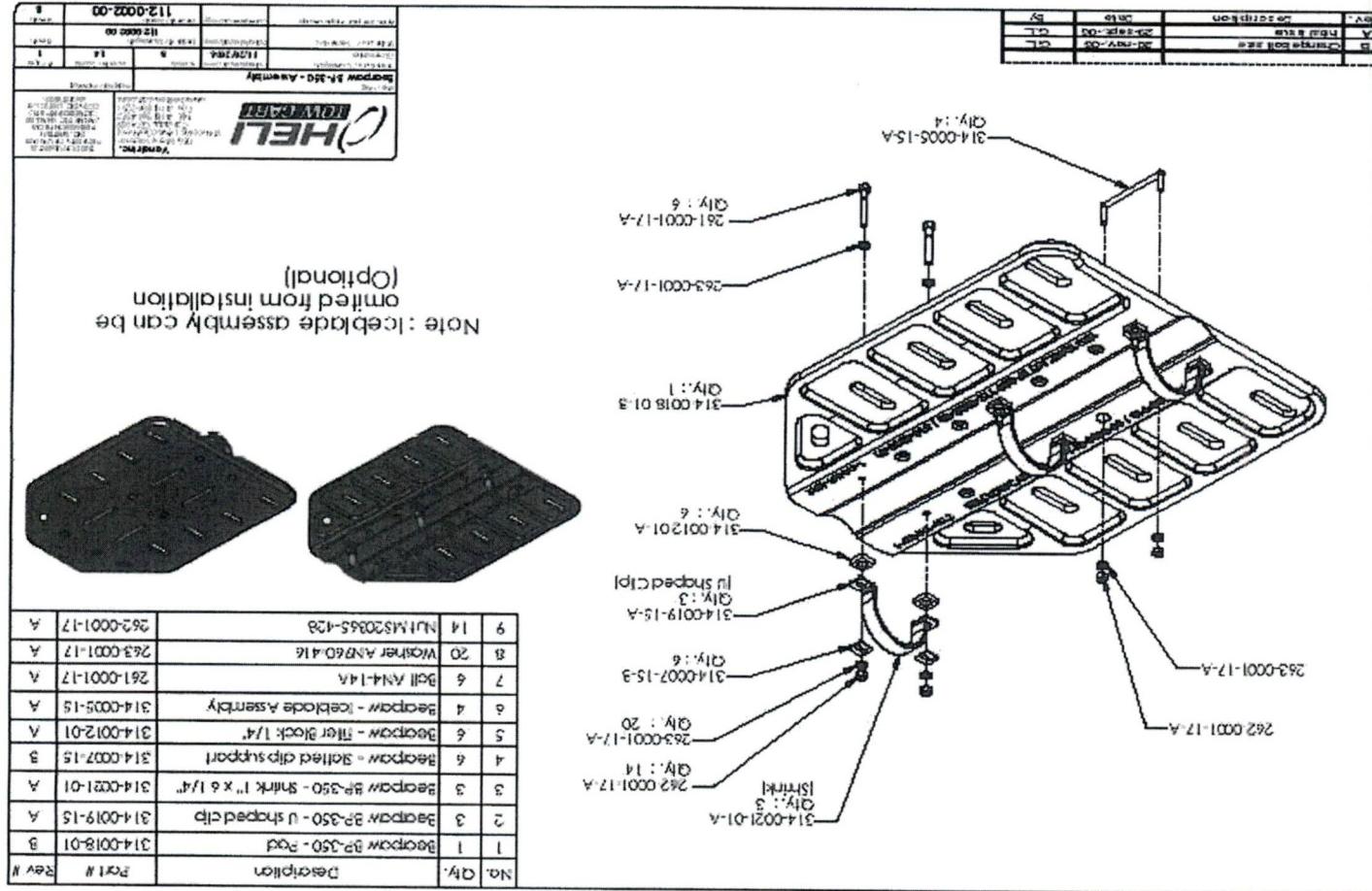
314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355

Annex A

BearPaw Assembly, Drawing no. 112-0002-00.



314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355





BY VANAIR

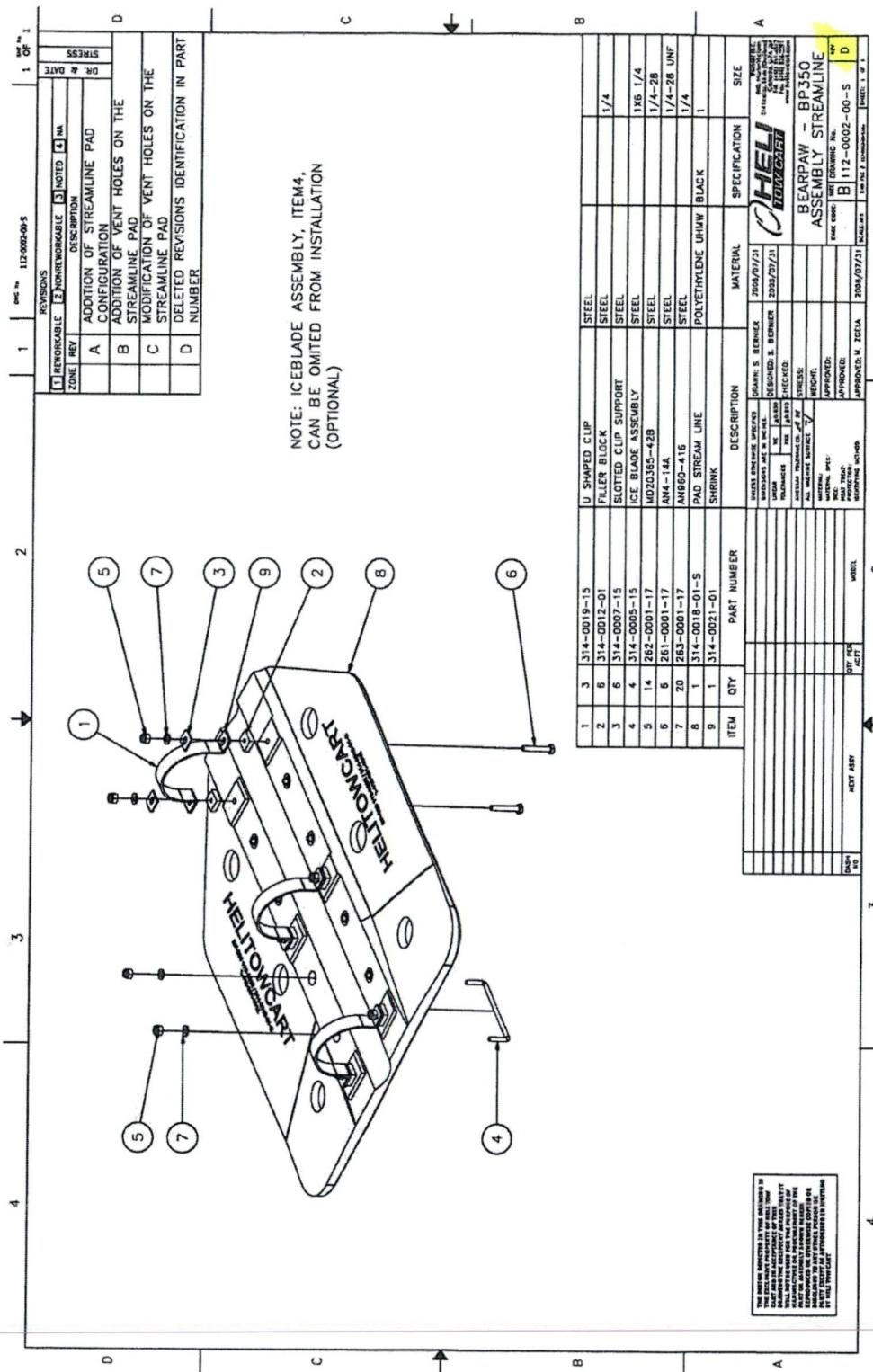
314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355

Annex A

BearPaw Assembly, Drawing no. P/N 112-0002-00-S.

Page 13 of 18

Tel: 1-418-561-4512, Fax: 1-418-836-2291, 860 Marie-Victorin, Saint-Nicolas, Lévis, Québec, Canada G7A 3S9.
www.helitowcart.com info@helitowcart.com





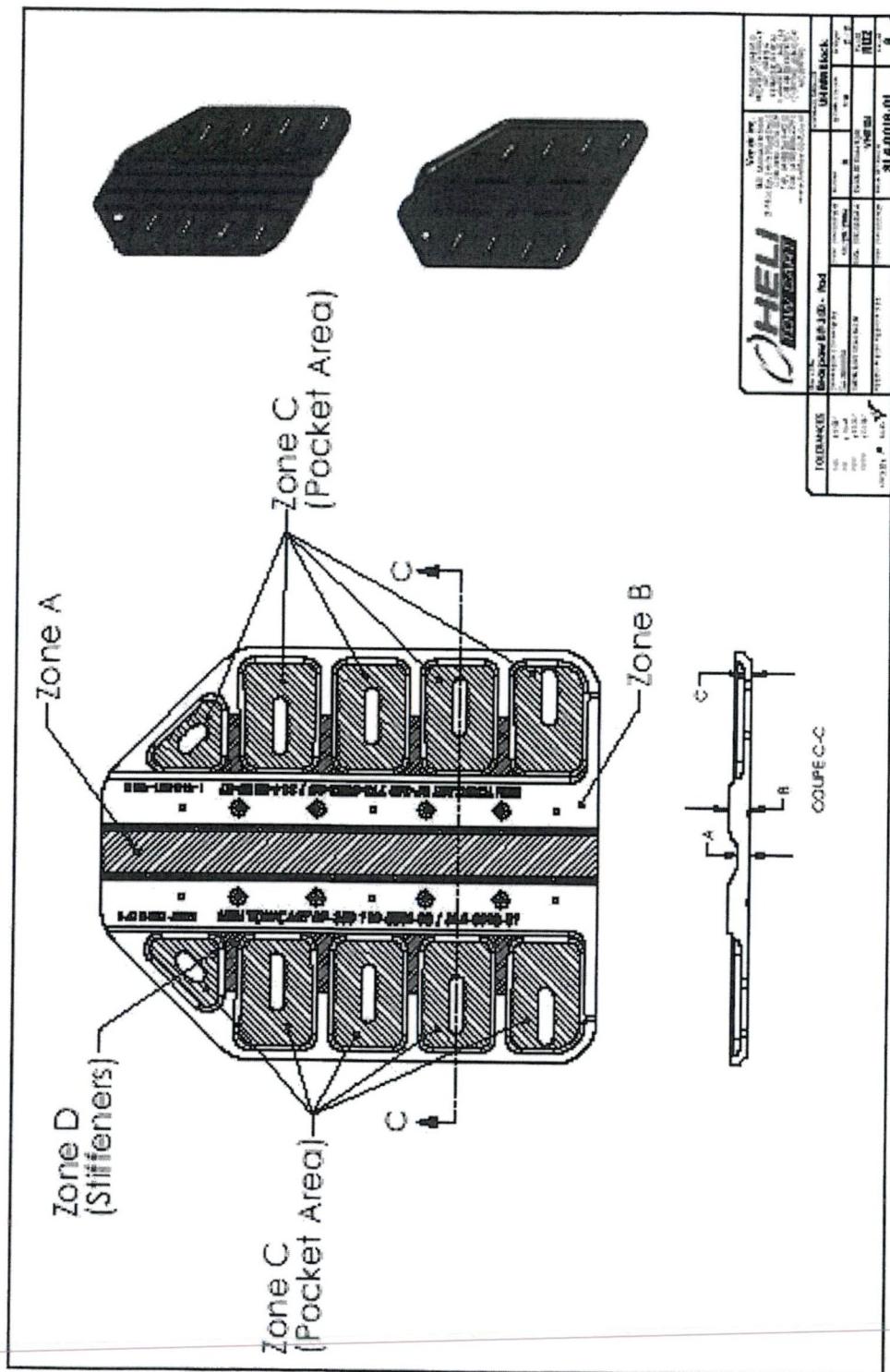
314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355

Annex B

BearPaw Pad, Drawing no. 314-0018-01 (VNR106) Page 2 of 2 Pocket Style Pad.

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314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355

Annex B

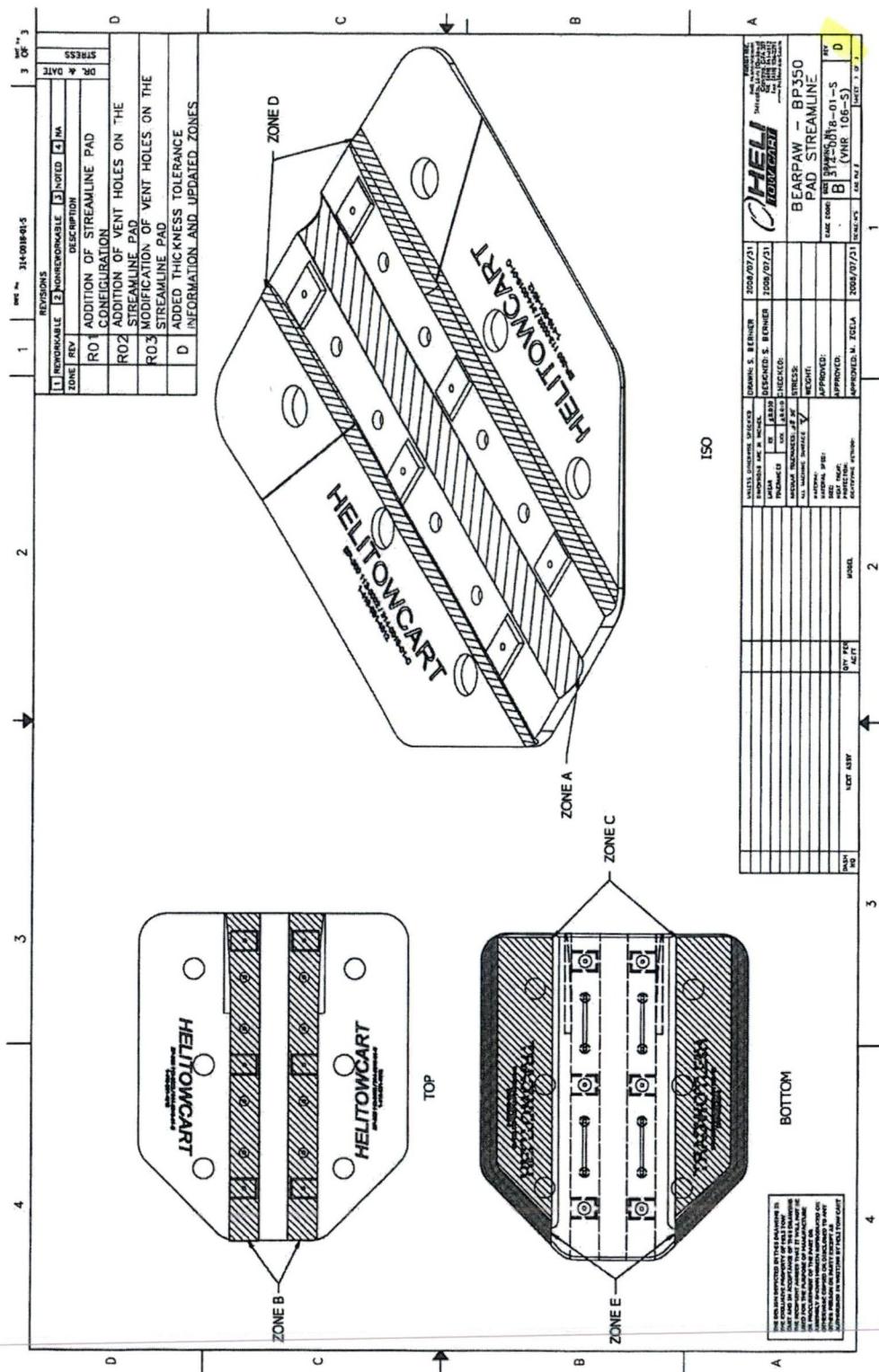
BearPaw Pad, Drawing no. 314-0018-01-S (VNR106-S) Page 3 of 3 Streamline Style Pad.

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314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355



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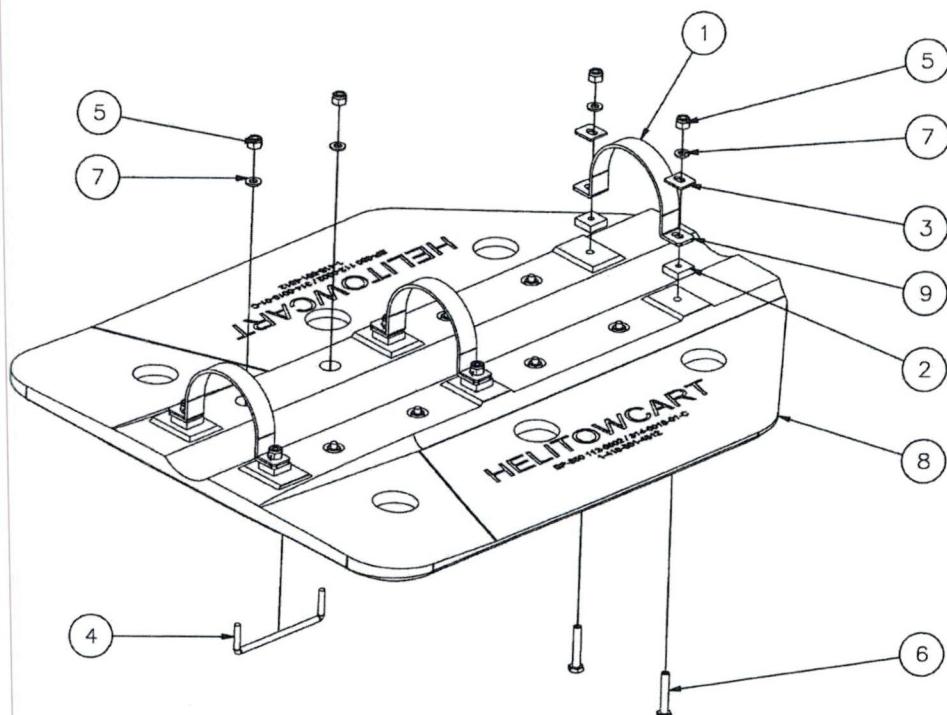
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Dwg No 112-0002-00-S

Sheet No 1 OF 1



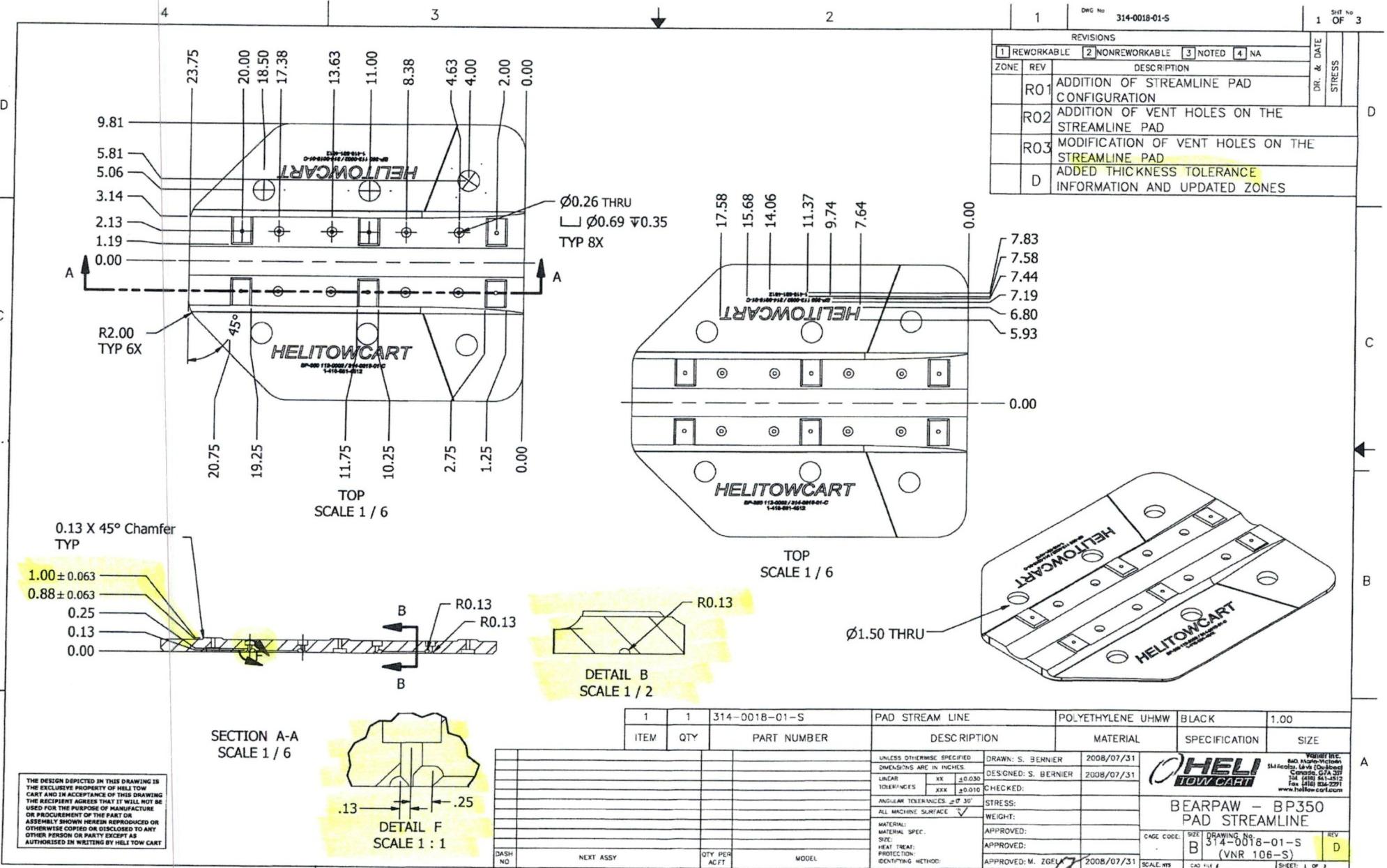
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE
1	3	314-0019-15	U SHAPED CLIP	STEEL		
2	6	314-0012-01	FILLER BLOCK	STEEL		1/4
3	6	314-0007-15	SLOTTED CLIP SUPPORT	STEEL		
4	4	314-0005-15	ICE BLADE ASSEMBLY	STEEL		1X6 1/4
5	14	252-0001-17	MD20365-42B	STEEL		1/4-28
6	6	251-0001-17	AN4-14A	STEEL		1/4-28 UNF
7	20	253-0001-17	AN960-416	STEEL		1/4
8	1	314-0018-01-S	PAD STREAM LINE	POLYETHYLENE UHMW	BLACK	1
9	1	314-0021-01	SHRINK			

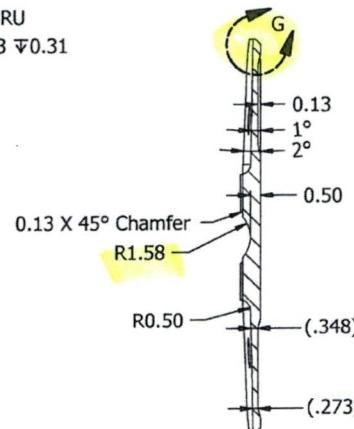
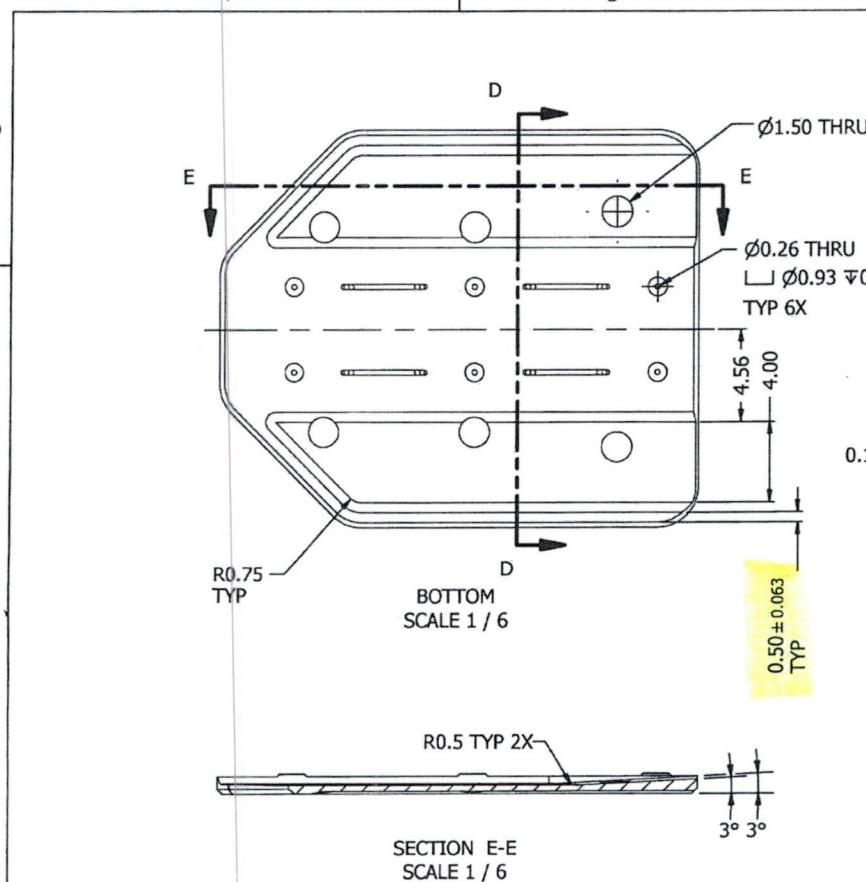
THE DESIGN ESPECIFIED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT DISCLOSE THE DESIGN OR MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCE OR OTHERWISE COPIED OR LICENSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART	Vendor Inc. HQ: 1400 E. 14th St., Suite 100 Phone: 402-467-4312 Fax: 402-467-2251 www.helitowcart.com
	DRAWN: S. BERNIER 2008/07/31
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	MODEL

BEARPAW - BP350
ASSEMBLY STREAMLINE

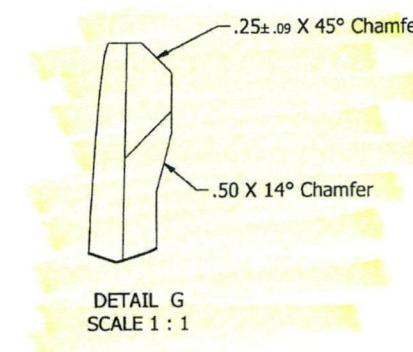
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D. Balmer
2013 02 09





SECTION D-D
SCALE 1 / 6



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TOW CART
Vendri Inc.
840 Moto-Victor
St. Kilda Rd. 3186 (Oval Road)
Camberwell VIC 3124
TEL: (03) 8511-2517
FAX: (03) 8511-2518
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BEARPAW - BP350
PAD STREAMLINE

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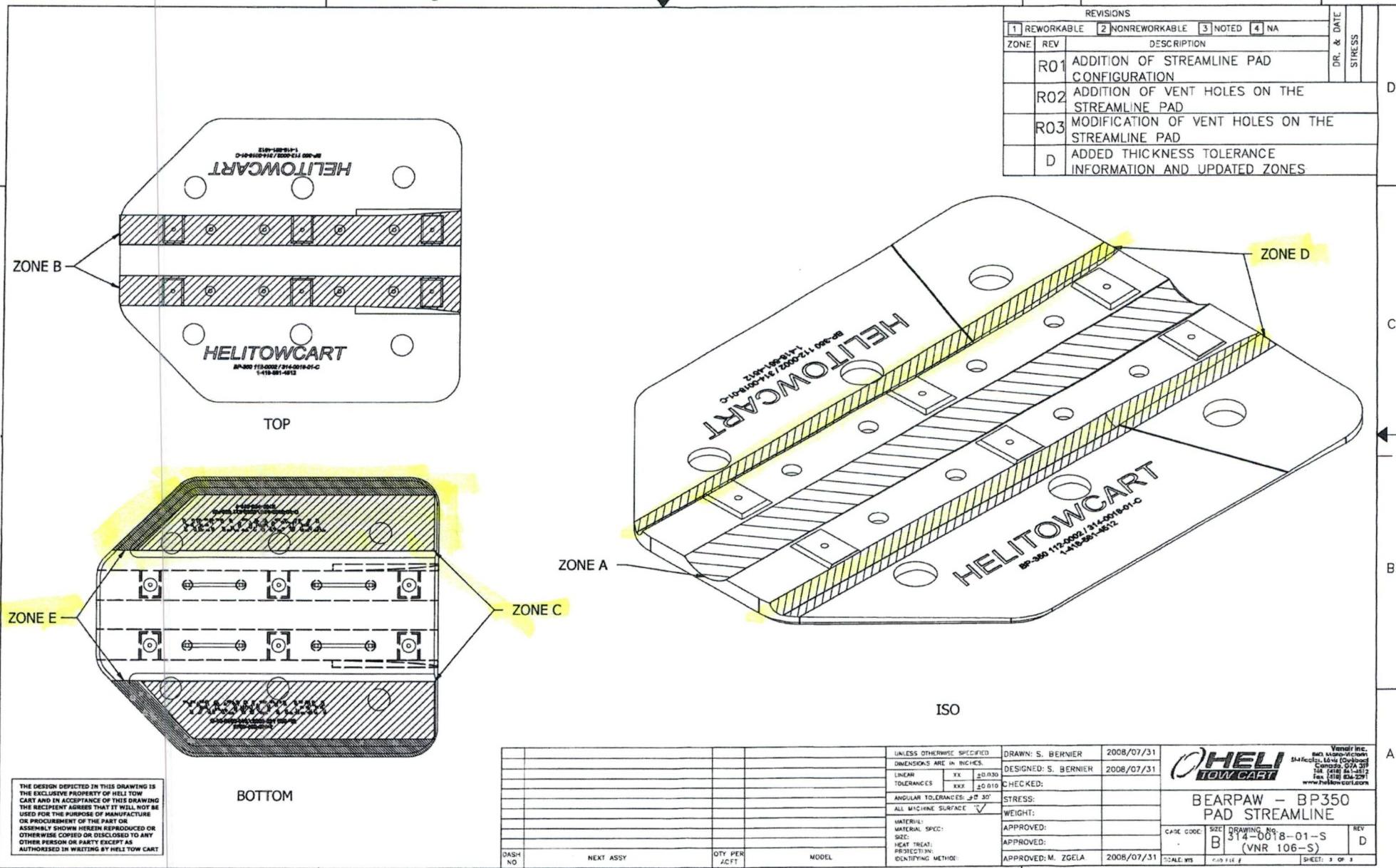
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3 SHEET NO 3





Master Document List

Helitowcart

Eurocopter Model AS 350/355 Series Helicopters Installation of BearPaw Model BP350

Report: HTC-MDL-BP-AS350/355-1000 (Rev F)

APPROVED BY:

A handwritten signature in black ink that appears to read "Mirko Zgela".

Mirko Zgela
Design Approval Representative

DATE: APRIL 8, 2010

DAR #310

*HTC-314-0020-00
Mirko Zgela
Apr 8, 2010*

Revision	Revision Date	Revision of Entry	Entered by
A	Nov 22, 2006	Initial issue	N/A
B	Jan 28, 2007	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
C	Feb 28, 2007	Addition of streamline pad configuration. Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
D	July 27, 2008	Addition of vents holes in the streamline pad.	M.Z.
E	Aug 01, 2008	Modification of vents holes in the streamline pad.	M.Z.
F	April 8, 2010	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.



1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355-1000	Compliance Plan – Eurocopter Model AS350/355 Series Helicopters – Installation of BearPaw Model BP350	NC	DAR 310	Nov 22, 2006
HTC-314-0020-00	BearPaw Model BP350 – Installation Instructions – AS350/355 Series Helicopters	E	DAR 310	April 8, 2010
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	A	DAR 310	July 31, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	A	DAR 310	July 31, 2008

2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
112-0002-00-S	BearPaw BP350 – Assembly Streamline	C	DAR 310	July 31, 2008
VNR084 314-0002-15	BearPaw – Iceblade	A R01	DAR 310	Apr 24, 2006
VNR085 314-0004-15	BearPaw – Iceblade Threaded Rod	A R01	DAR 310	Apr 24, 2006
VNR086 314-0005-15	BearPaw – Iceblade Assembly	A R01	DAR 310	Apr 24, 2006
VNR106 314-0018-01	BearPaw BP350 - Pad	B R02	DAR 310	Sept 26, 2006
VNR106-S 314-0018-01-S	BearPaw BP350 – Pad Streamline	B R03	DAR 310	July 31, 2008
VNR107 314-0019-15	BearPaw BP350 – U Shaped Clip	A R01	DAR 310	Sept 29, 2006
VNR089 314-0007-15	Bearpaw – Slotted Clip Support	B R04	DAR 310	July 31, 2006
VNR099 314-0012-01	Filler Block 1/4"	A R01	DAR 310	Aug 8, 2006



3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Material Properties - UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006

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REVISIONS & APPROVAL	p.7
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Annex B (BearPaw Pad Drawing)	

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw Model BP 350 (P/N 112-0002-00 or P/N 112-0002-00-S) for the AS 350 and AS 355 series helicopters.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance when installed on your helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following helicopter models:

Table 2 – Helicopter Model Effectivity

Make	Model	Transport Canada Type Certificate Data Sheet
Eurocopter	AS 350 D	H-83
Eurocopter	AS 350 D1	
Eurocopter	AS 350 B	
Eurocopter	AS 350 B1	
Eurocopter	AS 350 B2	
Eurocopter	AS 350 B3	
Eurocopter	AS 350 BA	
Eurocopter	AS 355 E	
Eurocopter	AS 355 F	
Eurocopter	AS 355 F1	
Eurocopter	AS 355 F2	H-87
Eurocopter	AS 355 N	

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION

BearPaw Installation

Reference Documentation:

- [1] Helicopter Maintenance Manual AS 350 or AS 355 as applicable.

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] as applicable to your helicopter model to allow a ground clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the skid tube wear shoes.

Step 2: IceBlade Installation

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the IceBlades

- With IceBlade Option
- Install ice blades (Qty: 4) (Iceblades P/N 314-0005-15) under BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A.
- Secure ice blades with washer (Washer P/N 263-0001-17) and nut (P/N 262-0001-17).

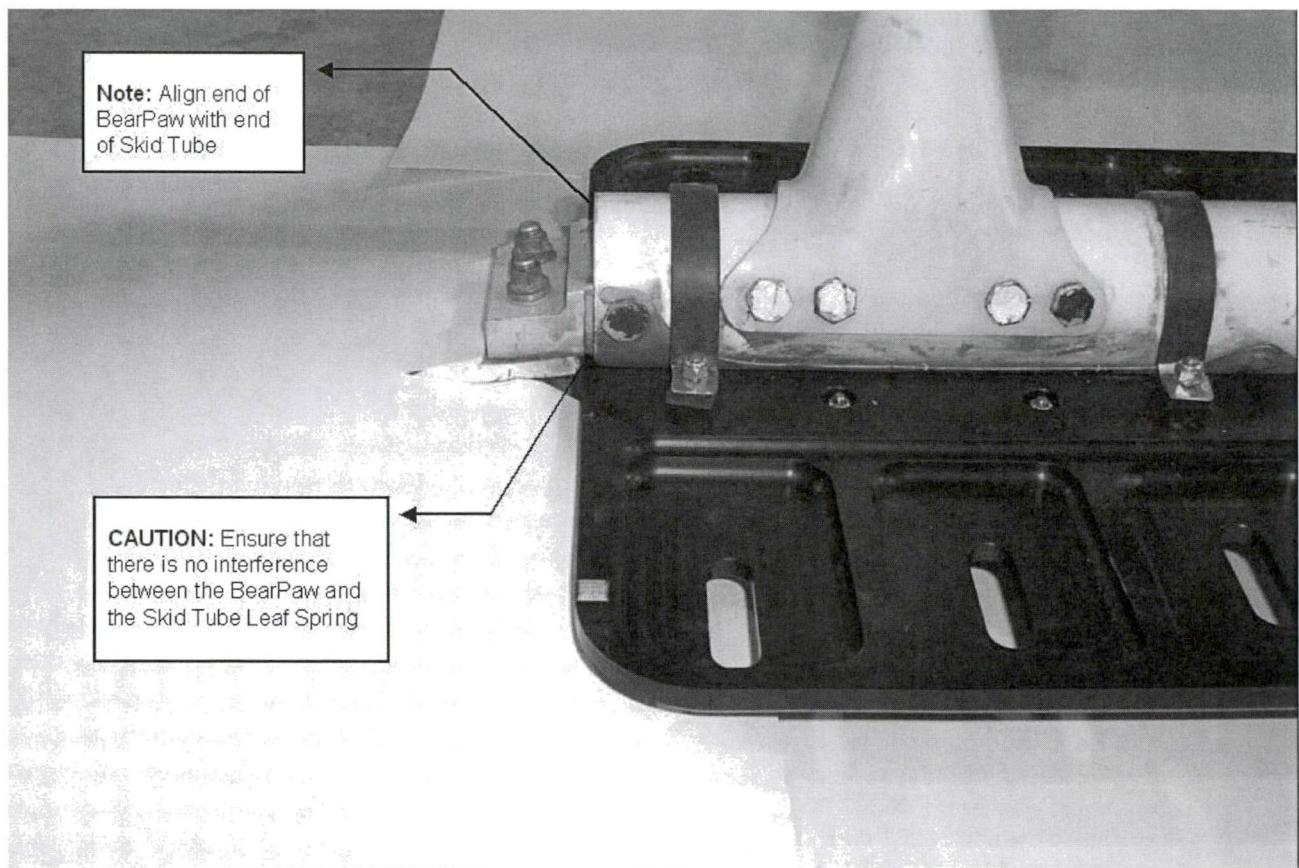
Step 3: BearPaw Installation

- Position the BearPaw under the skid as shown in Figure 1 with narrow edge pointing forward.
- Insert washers (P/N 263-0001-17) through all six bolts: 6x(261-0001-17);
- Insert bolts (P/N 261-0001-17) and washer (Washer P/N 263-0001-17) through BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;
- Insert filler blocks (P/N314-0012-01) as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;

Note: The use of filler blocks (P/N314-0012-01) may be replaced or complemented by the use of washers (P/N 263-0001-17) to fill in the gap. Bolts (P/N 261-0001-17) may be replaced by longer or shorter AN4 bolts as required.

- Insert both U-shaped clips (P/N 314-0019-15) through bolts: 6x(261-0001-17);
- Insert slotted clip supports (P/N 314-0007-15) through all six bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 – BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) - Alignment on Skid



BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), slotted clip support (P/N 314-0007-15) on U-shaped clips (P/N 314-0019-15),
- Remove washers (P/N 263-0001-17), U-shaped clips (P/N 314-0019-15), filler blocks (P/N 314-0012-01), and remove BearPaw pad (P/N 314-0018-01);
- Inspect skid tubes to confirm serviceability
- If the skid tube shoes have been removed, re-install shoes as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required using data provided in Table 3.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP350 (P/N 112-0002-00)	19,9 Lb 9,0 Kg	N/A	N/A	159,4 in. 404.9 cm	3172.0 in-lb 36.44 m-kg
Helitowcart BearPaw Model BP350 - Streamline (P/N 112-0002-00-S)	18,3 Lb 8,5 Kg	N/A	N/A	159,4 in. 404.9 cm	2917.0 in-lb 34.41 m-kg

Note: Weight and moment provided are for full kit installation.

Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part No.	Drawing no./name
BearPaw Model BP350	1	112-0002-00	VNR(112-0002-00) / BearPaw Assembly VNR (112-0002-00-S) /Bear Paw Streamline Assembly
BearPaw pad ⁽¹⁾	1	314-0018-01	VNR106 / BearPaw BP350 – Pad
BearPaw pad streamline ⁽¹⁾	1	314-0018-01S	VNR106S / BearPaw BP350 – Pad Streamline
U Shaped Clips	3	314-0019-15	VNR107 / BearPaw BP350 - U Shaped Clips
Slotted Clip Support	6	314-0007-15	VNR089 / BearPaw - Slotted Clip Support

Filler blocks 1/4"	6	314-0012-01	VNR099 / BearPaw – Filler block 1/4"
Bolts	6	261-0001-17	Bolt- AN4-14
Nuts	6	262-0001-17	Nut- MS20365-428
Washers	12	263-0001-17	Washer – AN960-416
Shrink	3	314-0021-01	BearPaw – Shrink Specifications & Install.(1"x6.25")
IceBlade Option Model OIB	4	314-0005-15	VNR086 / IceBlade Assembly
Nuts	8	262-0001-17	Nut- MS20365-428
Washers	8	263-0001-17	Washer – AN960-416

Note (1): Use BearPaw Pad P/N 314-0018-01 for VNR P/N 112-0002-00 and BearPaw Pad P/N 314-0018-01-S for VNR P/N 112-0002-00-S as applicable.

INSPECTION

Life Limited Items

Three are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:
Table 5 – Tolerances for cracks & wear and
Annex B – BearPaw Allowable Damage Drawing (VNR106 page 2 of 2 or VNR 106S page 2 of 2)

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 500 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the helicopter landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 500 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

500 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section “BearPaw Removal”,
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:
Table 5 – Tolerances for cracks & wear, &
Annex B – BearPaw Allowable Damage Drawing (VNR106 page 2 of 2 or VNR 106S page 2 of 2)

Table 5 – Tolerances for Cracks & Wear

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000	0,250	

C	0,375	0,075	<u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,50	None	<u>Stiffeners:</u> NO cracks in stiffeners.
E	0,375	0,075	<u>For P/N 112-0002-00-S Only</u>

Overhaul Requirements

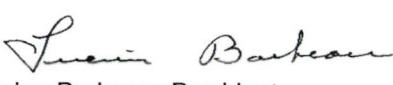
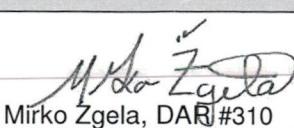
- Not applicable for the designated application of this device.

REVISIONS & APPROVAL

Revisions

Date	Rev	Nature of Revisions
Nov 20,2006	A	Initial issue
Jan 29, 2007	B	Minor editorials. Change to weight & Balance Data to reflect production model. Change in inspection schedule from 300 to 500 hours to match existing landing gear periodicity.
Feb 28, 2008	C	Introduction of new streamline BearPaw Pad configuration as alternate.
Aug 01, 2008	D	Modification of vent holes on the streamline pad
April 8, 2010	E	Correction to CofG data

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	April 8, 2010 Date:
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	April 8, 2010 Date:



314-0020-00-E

BearPaw Model BP350

Installation Instructions – AS350/355

Annex A

See: BearPaw Assembly, drawing no. (112-0002-00) or;
BearPaw Assembly, drawing no. (112-0002-00-S)

Annex B

See: BearPaw Pad, drawing no. VNR106. Page 2 of 2 or;
BearPaw Pad, drawing no. VNR106-S. Page 2 of 2.



314-0020-00-E
BearPaw Model BP350
Installation Instructions – AS350/355

Annex A

BearPaw Assembly, Drawing no. VNR(112-0002-00).
P/N 112-0002-00



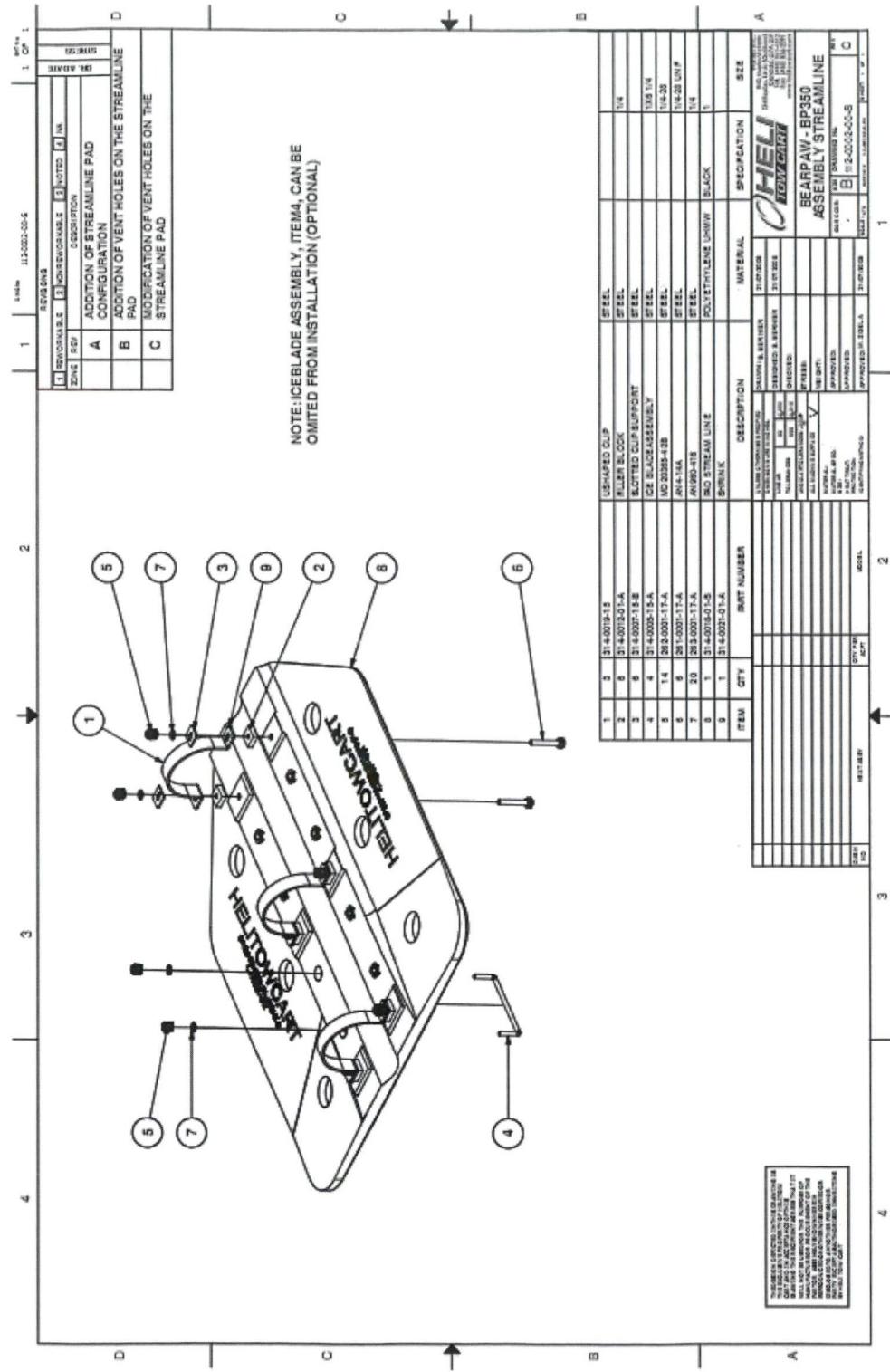
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BearPaw Model BP350
Installation Instructions – AS350/355



314-0020-00-E
BearPaw Model BP350
Installation Instructions – AS350/355

Annex A

BearPaw Assembly, Drawing no. VNR(112-0002-00-S).
P/N 112-0002-00-S



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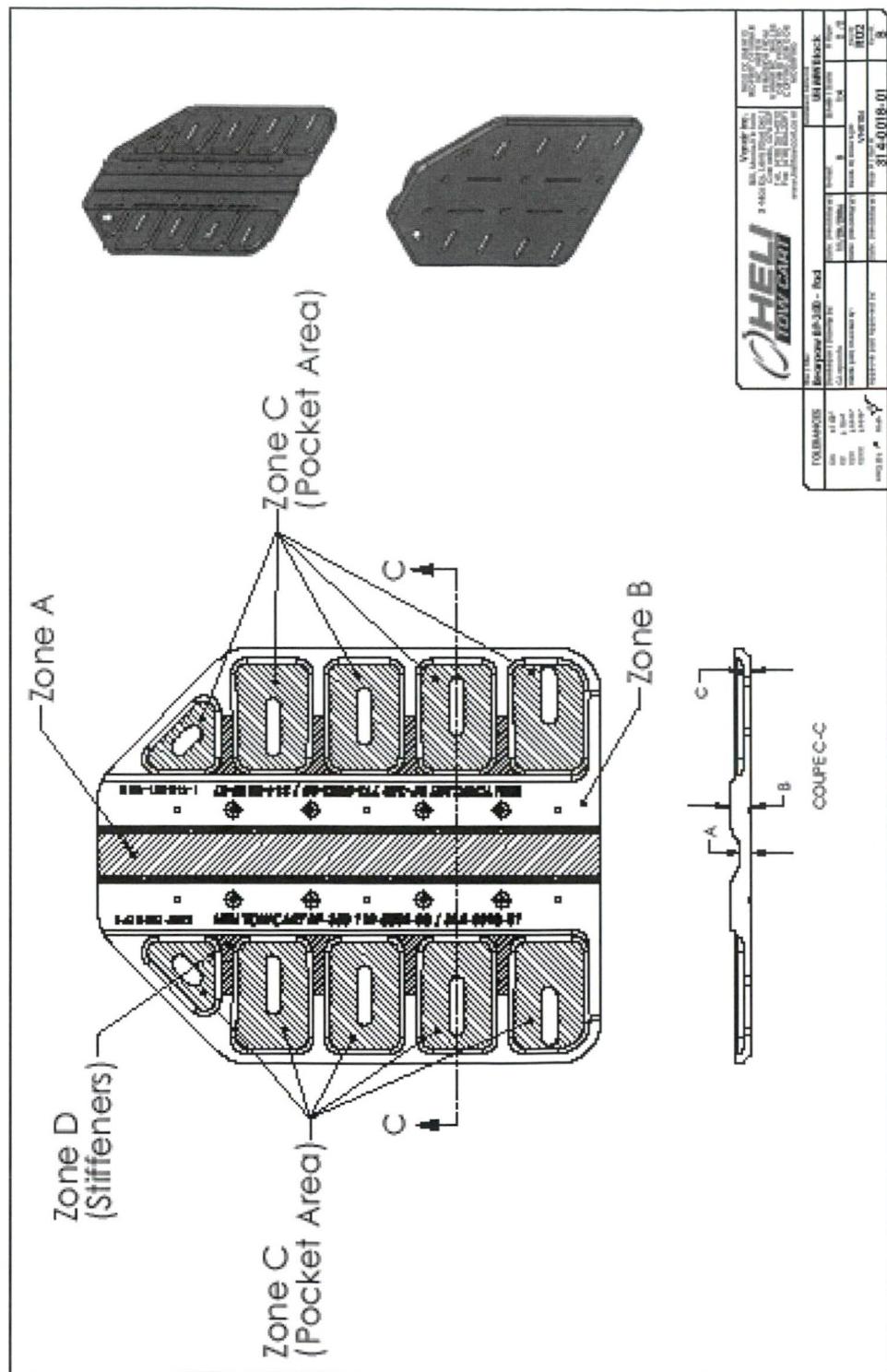
314-0020-00-E
BearPaw Model BP350
Installation Instructions – AS350/355

Annex B

BearPaw Pad, Drawing no. VNR106. Page 2 of 2.
P/N 314-0018-01

Page 13 of 16

Tel: 1-418-561-4512, Fax: 1-418-836-2291, 860 Marie-Victorin, Saint-Nicolas, Lévis, Québec, Canada G7A 3S9.
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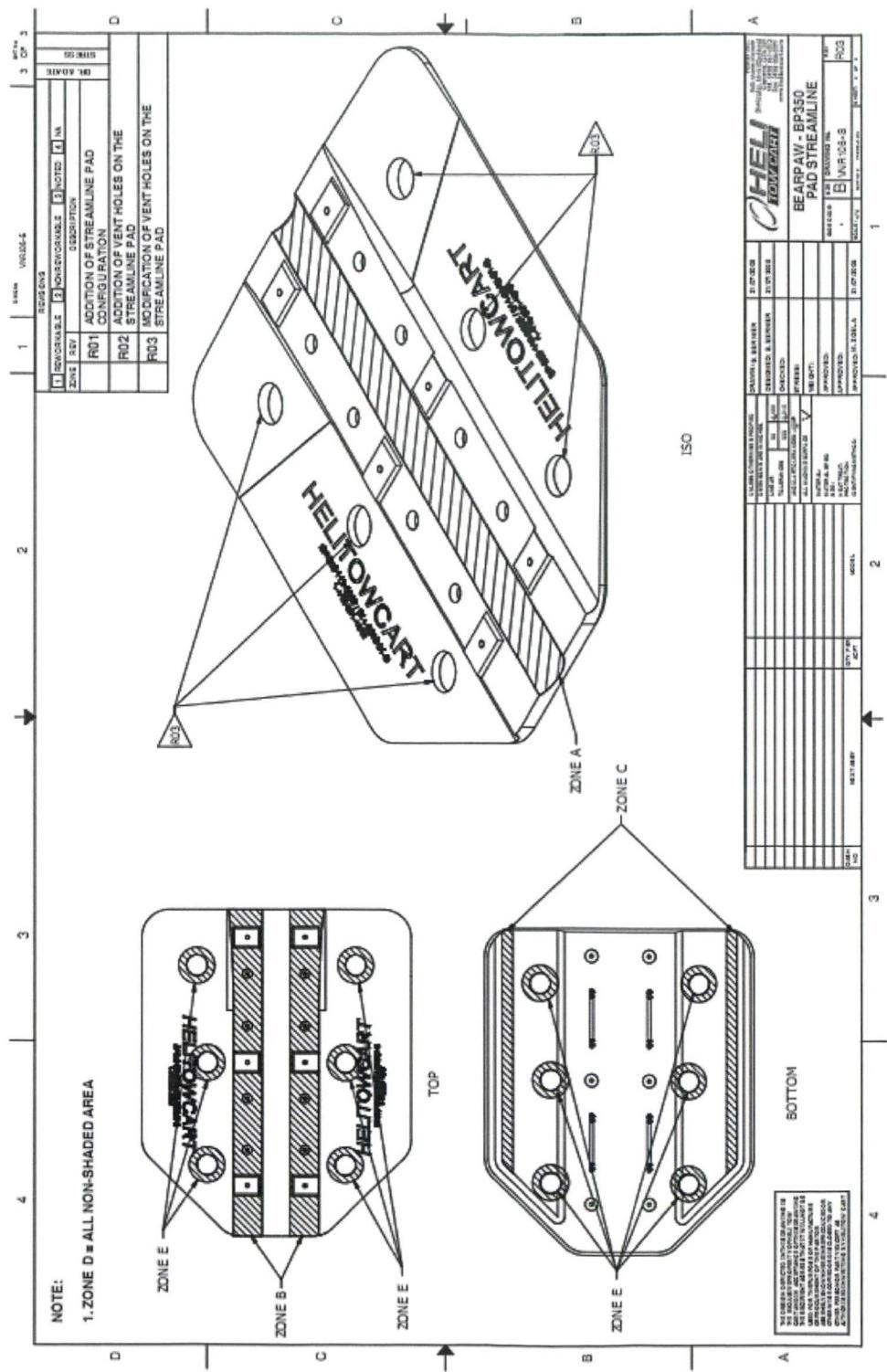
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Installation Instructions – AS350/355

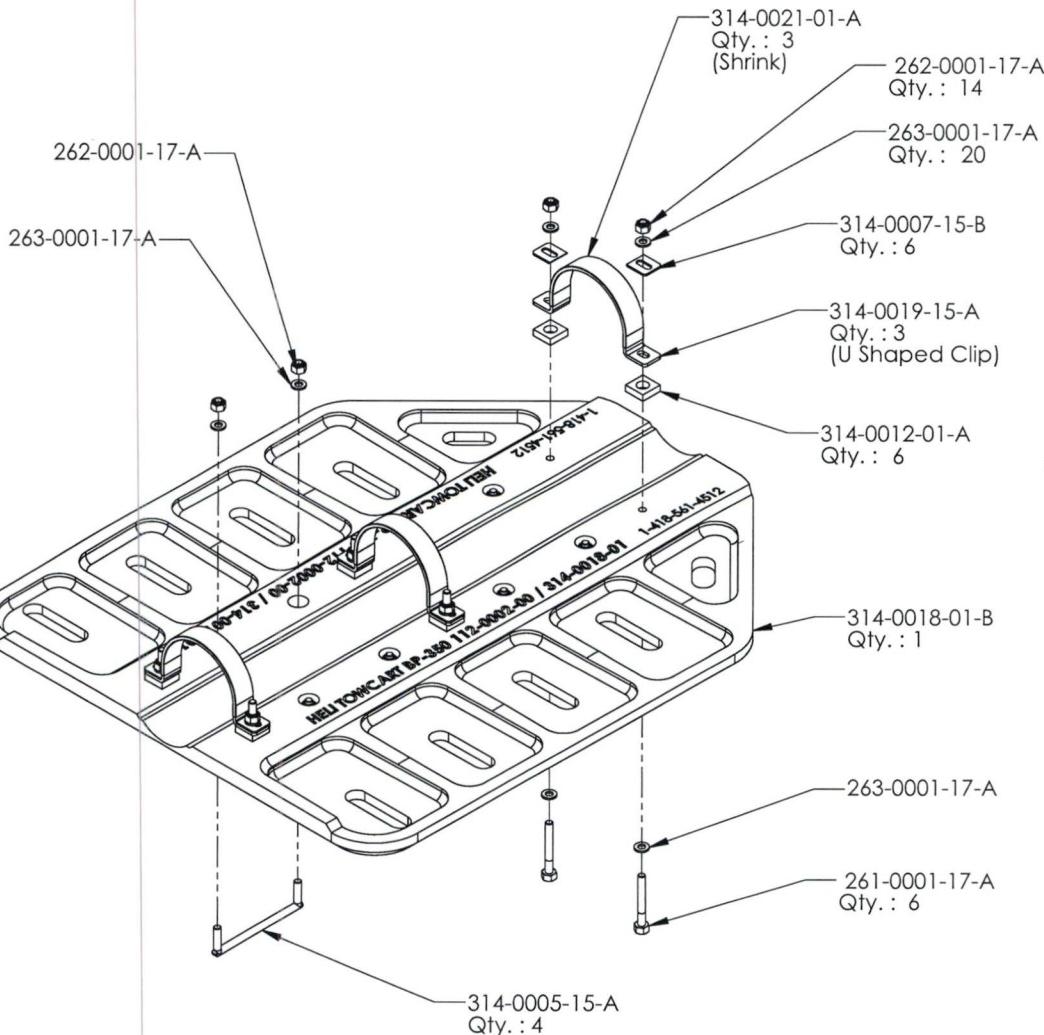
Annex B

BearPaw Pad, Drawing no. VNR106S. Page 2 of 2.
P/N 314-0018-01-S

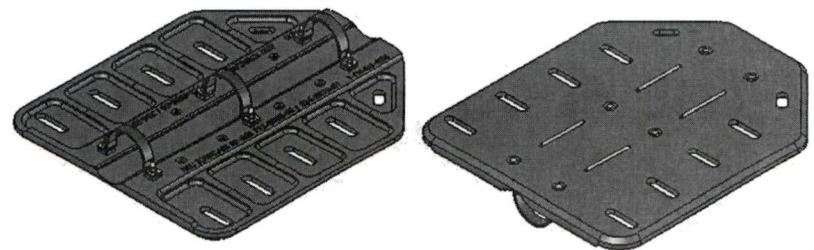
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www.helitowcart.com info@helitowcart.com





No.	Qty.	Description	Part #	Rev #
1	1	Bearpaw BP-350 - Pad	314-0018-01	B
2	3	Bearpaw BP-350 - U shaped clip	314-0019-15	A
3	3	Bearpaw BP-350 - Shrink 1" x 6 1/4"	314-0021-01	A
4	6	Bearpaw - Slotted clip support	314-0007-15	B
5	6	Bearpaw - Filler Block 1/4"	314-0012-01	A
6	4	Bearpaw - Iceblade Assembly	314-0005-15	A
7	6	Bolt AN4-14A	261-0001-17	A
8	20	Washer AN960-416	263-0001-17	A
9	14	Nut MS20365-428	262-0001-17	A



Note : Iceblade assembly can be omitted from installation
(Optional)

Rev.	Description	Date	By
B	Change bolt size	20-nov.-06	G.L.
A	Initial Issue	29-sept.-06	G.L.

Title / Title: Bearpaw BP-350 - Assembly		Matériel / Material:	
Dessiné par / Drawing by: G.Lapointe	Date: (mm/dd/yyyy) 11/20/2006	Format: B	Échelle / Scale: 1:4
Vérifié par / Checker by: 	Date: (mm/dd/yyyy) 	Dessin # / Drawing #: 112-0002-00	# Page: 1
Approuvé par / Approved by: 	Date: (mm/dd/yyyy) 	Pièce # / Part #: 112-0002-00	Rev #: B

4

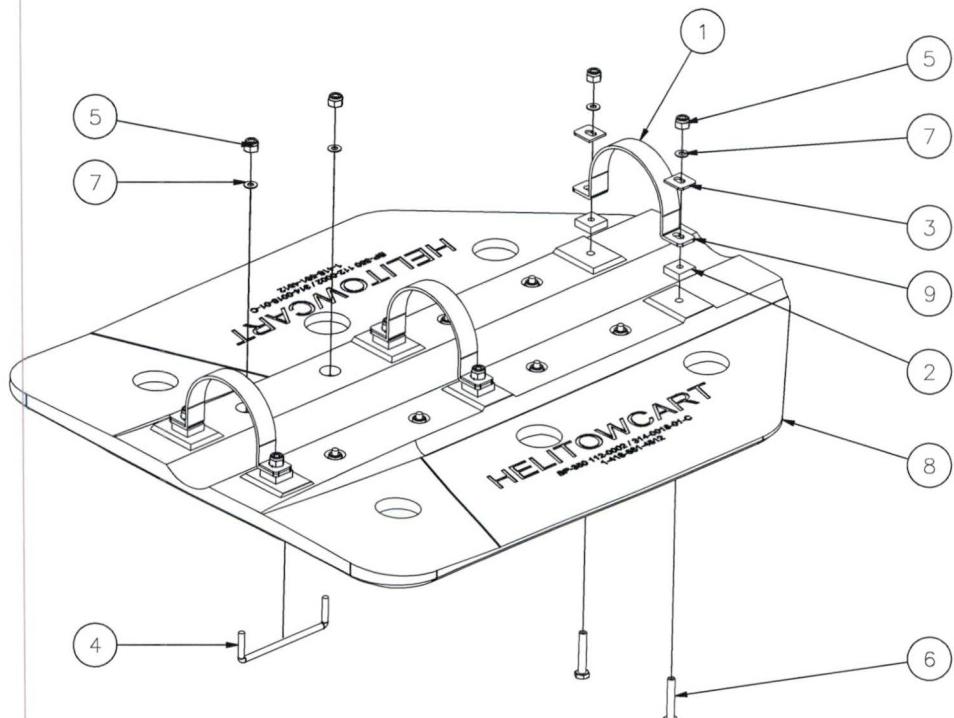
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DWG No 112-0002-00-S

1 SHT No 1 OF 1



NOTE: ICEBLADE ASSEMBLY, ITEM4, CAN BE OMITTED FROM INSTALLATION (OPTIONAL)

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE
1	3	314 0019 15	U SHAPED CLIP	STEEL		
2	6	314 0012 01 A	FILLER BLOCK	STEEL		1/4
3	6	314 0007 15 B	SLOTTED CLIP SUPPORT	STEEL		
4	4	314 0005 15 A	ICE BLADE ASSEMBLY	STEEL		1X6 1/4
5	14	262 0001 17 A	MD20365 42B	STEEL		1/4 28
6	6	261 0001 17 A	AN4 14A	STEEL		1/4 28 UNF
7	20	263 0001 17 A	AN960 416	STEEL		1/4
8	1	314 0018 01 S	PAD STREAM LINE	POLYETHYLENE UHMW	BLACK	1
9	1	314 0021 01 A	SHRINK			

				UNLESS OTHERWISE SPECIFIED	DRAWN: S. BERNIER	31/07/2008	TOP DRAWING SHEET 1 OF 1 112-0002-00-S HELITOWCART HELITOWCART HELITOWCART		
				DIMENSIONS ARE IN INCHES.	DESIGNED: S. BERNIER	31/07/2008			
				LINEAR TOLERANCES	XX	± 0.030			
					XXX	± 0.010	CHECKED:		
				ANGULAR TOLERANCES: $\pm 7.30^\circ$		STRESS:			
				ALL MACHINE SURFACE ✓		WEIGHT:			
DASH NO	NEXT ASSY	QTY PER ACFT	MODEL	MATERIAL: MATERIAL SPEC: HEAT TREAT: PROTECTION: IDENTIFYING METHOD:	APPROVED:	APPROVED:	CAGE CODE: B	SIZE DRAWING NO. 112-0002-00-S	REV C
							SCALE: NTS	CAD FILE # 112-0002-00-S.dwg	SHEET: 1 OF 1

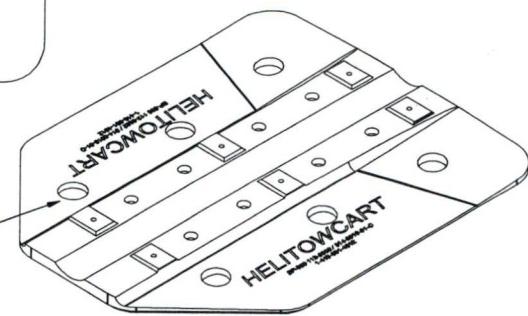
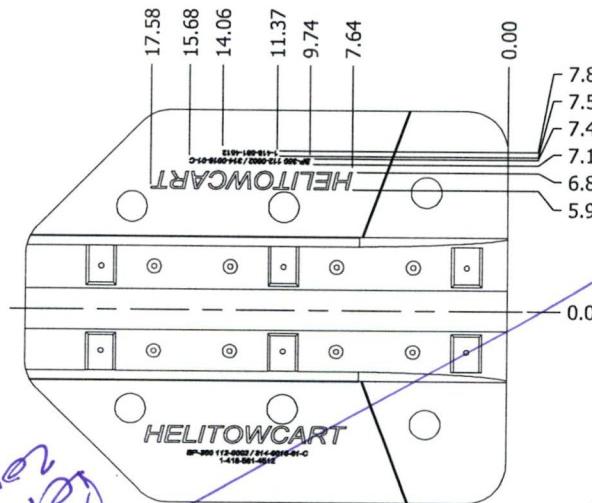
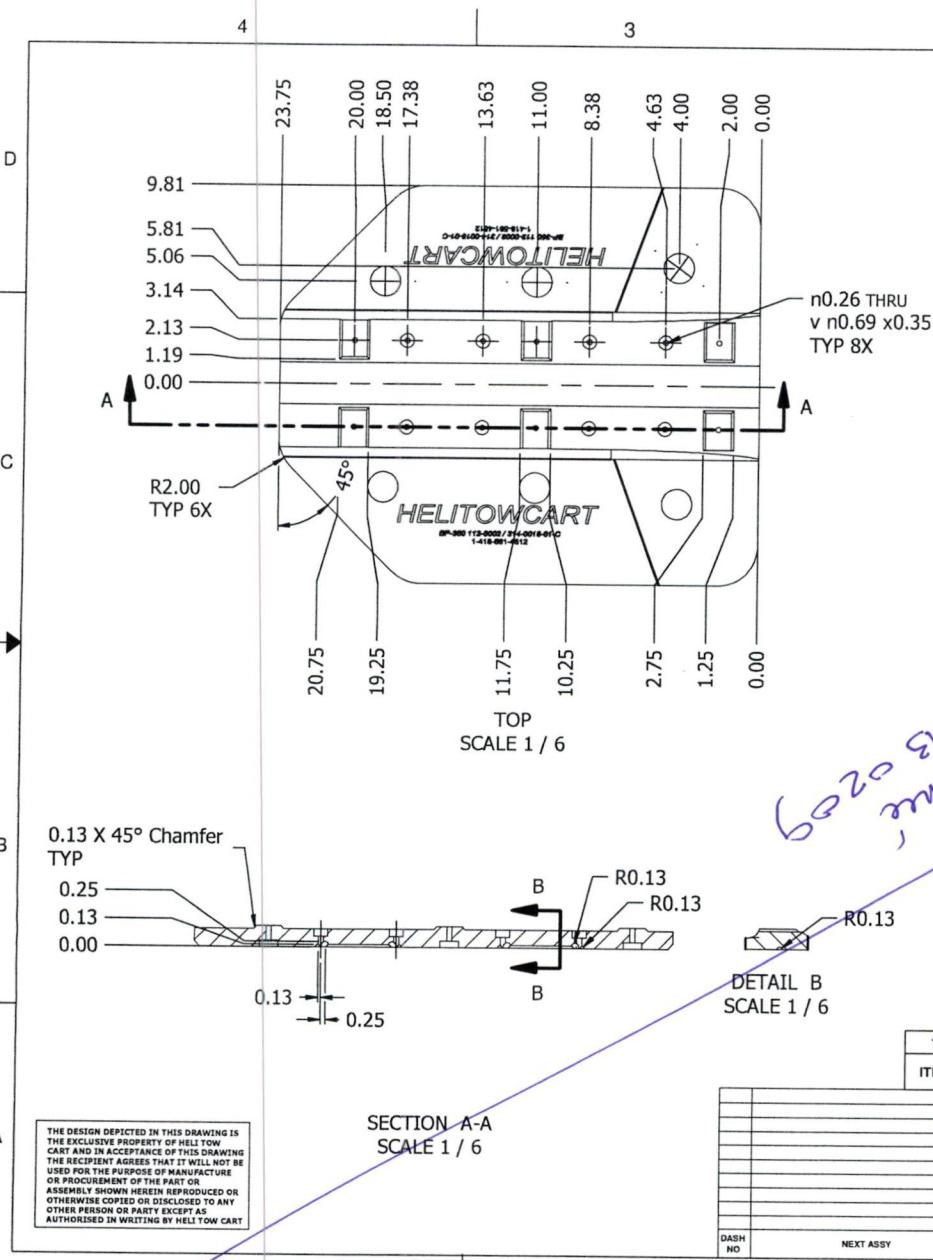
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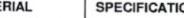
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1	1	314-0018-01-S	PAD STREAM LINE	POLYETHYLENE UHMW	BLACK	1
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE
<p>UNLESS OTHERWISE SPECIFIED DRAWN: S. BERNIER 2008-07-31</p> <p>DIMENSIONS ARE IN INCHES</p> <p>LINEAR $\pm .030$ DESIGNED: S. BERNIER 2008-07-31</p> <p>TOLERANCES $\pm .010$ CHECKED:</p> <p>ANGULAR TOLERANCES: $\pm 1^\circ$ STRESS:</p> <p>ALL MACHINE SURFACE WEIGHT:</p> <p>MATERIAL: APPROVED:</p> <p>MATERIAL SPEC: APPROVED:</p> <p>SIZE: APPROVED:</p> <p>PROTECT: APPROVED:</p> <p>IDENTIFYING METHOD: APPROVED: M. ZGELA 2008-07-31</p> <p>SCALE: NTS CAP FILE: VNE106-S.mbr SHEET: 1 OF 3</p>  <p style="text-align: right;">VNR106-S Bob O'Heili-Victor 3M Industrial Park Cambridge, ON N1R 2L2 Fax: (416) 334-2250 www.ohelitowcart.com</p>						
DASH NO	NEXT ASSY	QTY PER ACFT	MODEL	CAGE CODE: B	DRAWING No: VNR106-S	REV: R0

a. Rautan 08.08.01

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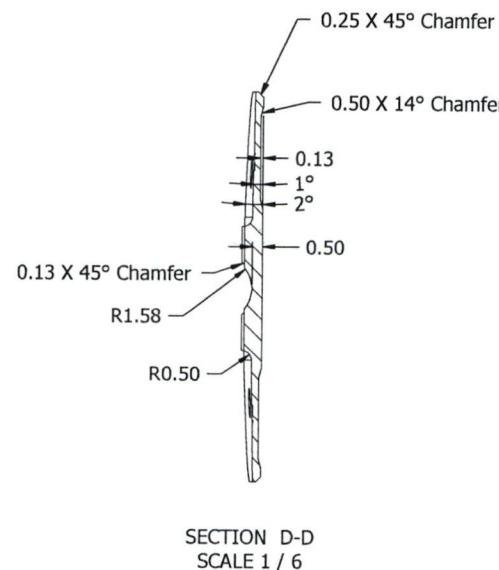
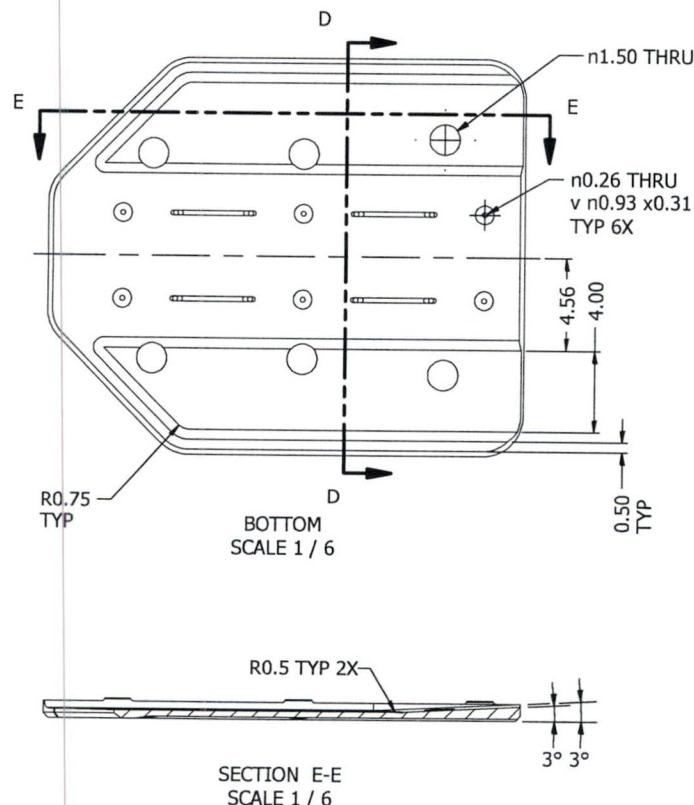
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SHT No 2 OF 3



THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR REPRODUCTION. NO PART OF THE ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART.

UNLESS OTHERWISE SPECIFIED	DRAWN: S. BERNIER	2008-07-31	OHELI TOW CART Vendor Inc. R&D: Quebec - Victoria Manufacturing: Guelph Sales: Guelph 701 (416) 651-4512 701 (416) 651-4513 www.thehelitowcart.com
DIMENSIONS ARE IN INCHES	DESIGNED: S. BERNIER	2008-07-31	
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TOLERANCES	XXX	+0.010	
ANGULAR TOLERANCES: ±0.20°	STRESS:		
ALL MACHINE SURFACE	WEIGHT:		
MATERIAL:	APPROVED:		
MATERIAL SPEC:	APPROVED:		
SIZE:	APPROVED:		
HOT TREAT:	APPROVED:		
PROTECTION:	APPROVED:		
IDENTIFYING METHOD:	APPROVED: M. ZGELA	2008-07-31	
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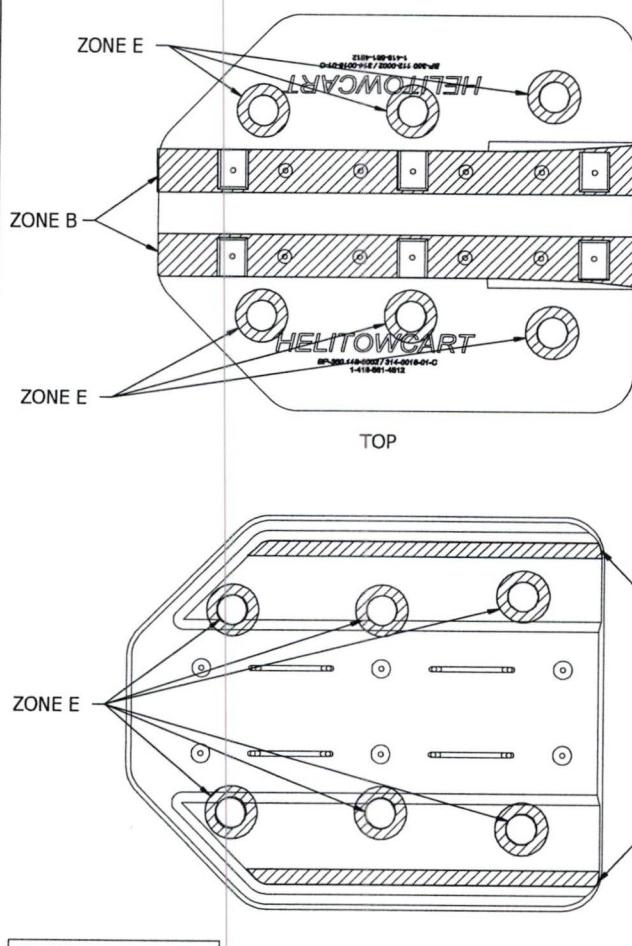
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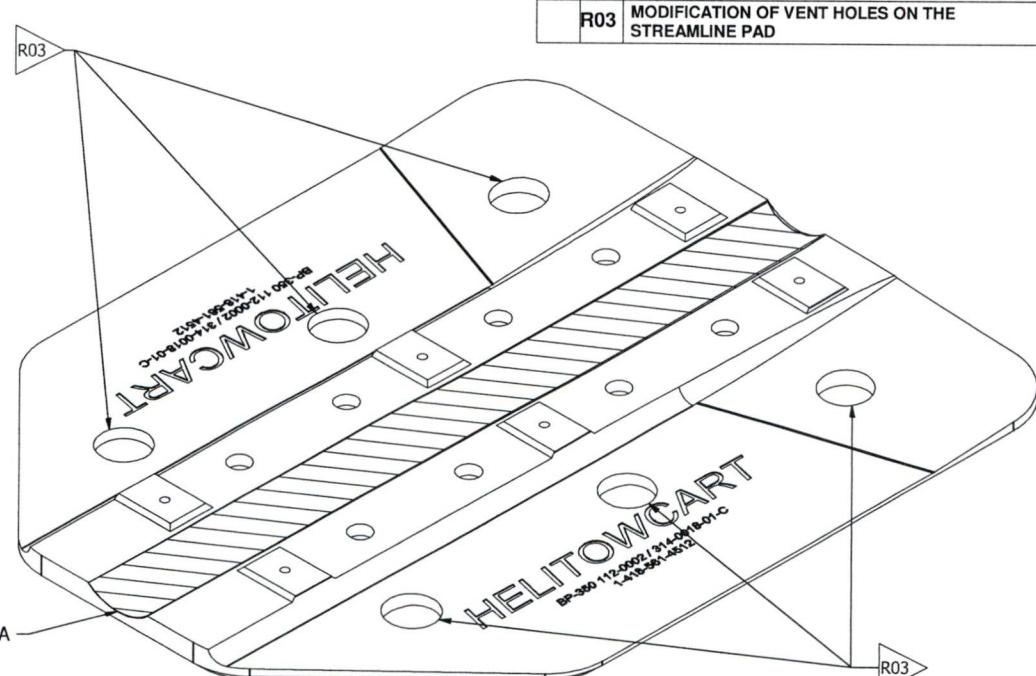
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DWG No
VNR106-SSHT No
3 OF 3**NOTE:**

1. ZONE D = ALL NON-SHADED AREA



THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE SIGNATOR AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HERIN REPRODUCED OR ALTERED OR ADAPTED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART



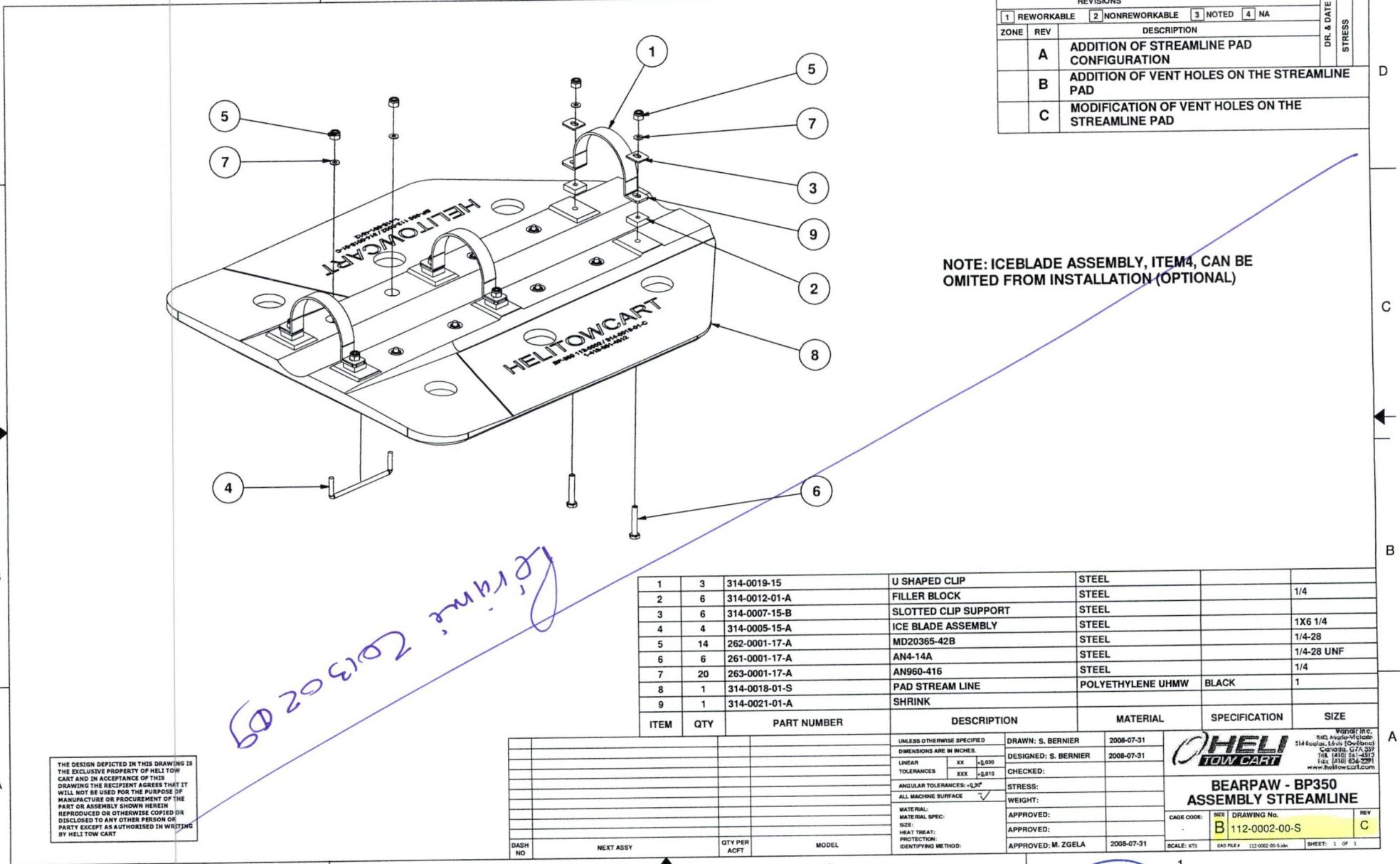
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				DIMENSIONS ARE IN INCHES.	DESIGNED: S. BERNIER	2008-07-31	
DASH NO	NEXT ASSY	QTY PER ACFT	MODEL	LINEAR TOLERANCES	XX ± 0.030	checked	
XXX	XXX	XXX	XXX	ANGULAR TOLERANCES: $\pm 4.2^\circ$	ALL MACHINE SURFACE ✓	STRESS:	
						WEIGHT:	
						APPROVED:	
						APPROVED:	
						APPROVED: M. ZGELA	2008-07-31
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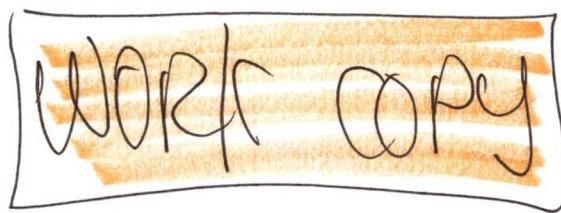
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Master Document List Helitowcart

Eurocopter Model AS 350/355 Series Helicopters Installation of BearPaw Model BP350

Report: HTC-MDL-BP-AS350/355-1000 (Rev G)

APPROVED BY:

DATE: DECEMBER 21, 2012

Mirko Zgela
Design Approval Representative DAR #310

Revision	Revision Date	Revision of Entry	Entered by
A	Nov 22, 2006	Initial issue	N/A
B	Jan 28, 2007	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
C	Feb 28, 2007	Addition of streamline pad configuration. Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
D	July 27, 2008	Addition of vents holes in the streamline pad.	M.Z.
E	Aug 01, 2008	Modification of vents holes in the streamline pad.	M.Z.
F	April 8, 2010	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
G	December 21, 2012	Updated Tolerance data regarding Pad and Updated referenced document identification and revisions	M.Z.

1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355-1000	Compliance Plan – Eurocopter Model AS350/355 Series Helicopters – Installation of BearPaw Model BP350	NC	DAR 310	Nov 22, 2006
HTC-314-0020-00-E	BearPaw Model BP350 – Installation Instruction – AS350/355 Series Helicopters	F	DAR 310	Dec 21, 2012
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	A	DAR 310	July 31, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	A	DAR 310	July 31, 2008

2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
112-0002-00-S	BearPaw BP350 – Assembly Streamline	D	DAR 310	Dec 21, 2012
314-0002-15 (VNR084)	BearPaw – Iceblade	A (R01)	DAR 310	Apr 24, 2006
314-0004-15 (VNR085)	BearPaw – Iceblade Threaded Rod	A (R01)	DAR 310	Apr 24, 2006
314-0005-15 (VNR086)	BearPaw – Iceblade Assembly	A (R01)	DAR 310	Apr 24, 2006
314-0007-15 (VNR089)	Bearpaw – Slotted Clip Support	B (R04)	DAR 310	July 31, 2006
314-0012-01 (VNR099)	Filler Block $\frac{1}{4}$ "	A (R01)	DAR 310	Aug 8, 2006
314-0018-01 (VNR106)	BearPaw BP350 - Pad	B (R02)	DAR 310	Sept 26, 2006
314-0018-01-S (VNR106-S)	BearPaw BP350 – Pad Streamline	D	DAR 310	Dec 21, 2012
314-0019-15 (VNR107)	BearPaw BP350 – U Shaped Clip	A (R01)	DAR 310	Sept 29, 2006

3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01	Material Properties - UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05	Heat Shrink Specifications	A	N/A	Sept 6, 2006

WORK COPY

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Annex B (BearPaw Pad Drawing)	



INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw Model BP 350 (P/N 112-0002-00 or P/N 112-0002-00-S) for the AS 350 and AS 355 series helicopters.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance when installed on your helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel: 1 (418) 561-4512 Fax: 1 (418) 836-4575 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following helicopter models:

Table 2 – Helicopter Model Effectivity

Make	Model	Transport Canada Type Certificate Data Sheet
Eurocopter	AS 350 D	H-83
Eurocopter	AS 350 D1	
Eurocopter	AS 350 B	
Eurocopter	AS 350 B1	
Eurocopter	AS 350 B2	
Eurocopter	AS 350 B3	
Eurocopter	AS 350 BA	
Eurocopter	AS 355 E	
Eurocopter	AS 355 F	
Eurocopter	AS 355 F1	
Eurocopter	AS 355 F2	H-87
Eurocopter	AS 355 N	

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION

BearPaw Installation

Reference Documentation:

- [1] Helicopter Maintenance Manual AS 350 or AS 355 as applicable.

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] as applicable to your helicopter model to allow a ground clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the skid tube wear shoes.

Step 2: IceBlade Installation

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the IceBlades

- With IceBlade Option
- Install ice blades (Qty: 4) (Iceblades P/N 314-0005-15) under BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A.
- Secure ice blades with washer (Washer P/N 263-0001-17) and nut (P/N 262-0001-17).

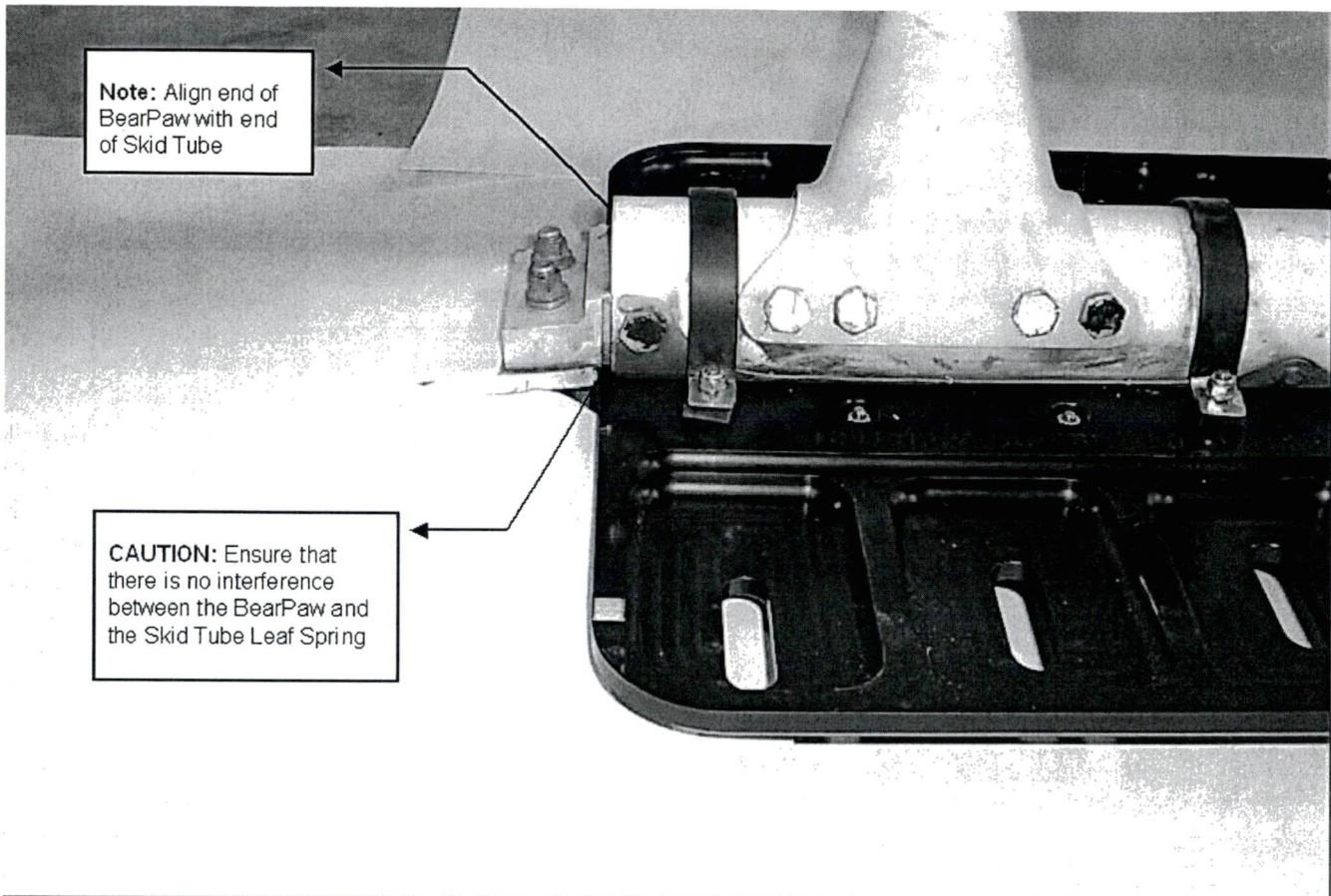
Step 3: BearPaw Installation

- Position the BearPaw under the skid as shown in Figure 1 with narrow edge pointing forward.
- Insert washers (P/N 263-0001-17) through all six bolts: 6x(261-0001-17);
- Insert bolts (P/N 261-0001-17) and washer (Washer P/N 263-0001-17) through BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;
- Insert filler blocks (P/N314-0012-01) as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;

Note: The use of filler blocks (P/N314-0012-01) may be replaced or complemented by the use of washers (P/N 263-0001-17) to fill in the gap. Bolts (P/N 261-0001-17) may be replaced by longer or shorter AN4 bolts as required.

- Insert both U-shaped clips (P/N 314-0019-15) through bolts: 6x(261-0001-17);
- Insert slotted clip supports (P/N 314-0007-15) through all six bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 – BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) - Alignment on Skid



BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), slotted clip support (P/N 314-0007-15) on U-shaped clips (P/N 314-0019-15),
- Remove washers (P/N 263-0001-17), U-shaped clips (P/N 314-0019-15), filler blocks (P/N 314-0012-01), and remove BearPaw pad (P/N 314-0018-01) or (P/N 314-0018-01-S Streamline);
- Inspect skid tubes to confirm serviceability
- If the skid tube shoes have been removed, re-install shoes as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required using data provided in Table 3.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP350 (P/N 112-0002-00)	19,9 Lb 9,0 Kg	N/A	N/A	159,4 in. 404.9 cm	3172.0 in-lb 36.44 m-kg
Helitowcart BearPaw Model BP350 - <u>Streamline</u> (P/N 112-0002-00-S)	18,3 Lb 8,5 Kg	N/A	N/A	159,4 in. 404.9 cm	2917.0 in-lb 34.41 m-kg

Note: Weight and moment provided are for full kit installation.

Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part / Dwg No.	Additional Drawing Reference No./ Name
BearPaw Model BP350	1	112-0002-00	112-0002-00 / BearPaw Assembly, or 112-0002-00-S /Bear Paw Streamline Assembly
BearPaw pad ⁽¹⁾	1	314-0018-01	BearPaw BP350 – Pad (VNR106)
BearPaw pad streamline ⁽¹⁾	1	314-0018-01S	BearPaw BP350 – Pad Streamline (VNR106-S)
U Shaped Clips	3	314-0019-15	BearPaw BP350 - U Shaped Clips (VNR107)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks 1/4"	6	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Bolts	6	261-0001-17	Bolt- AN4-14
Nuts	6	262-0001-17	Nut- MS20365-428
Washers	12	263-0001-17	Washer – AN960-416
Shrink	3	314-0021-01	BearPaw – Shrink Specifications & Install.(1"x6.25")
IceBlade Option Model OIB	4	314-0005-15	IceBlade Assembly (VNR086)
Nuts	8	262-0001-17	Nut- MS20365-428
Washers	8	263-0001-17	Washer – AN960-416

Note (1): Use pocked shaped BearPaw Pad P/N 314-0018-01 for assembly P/N 112-0002-00. Use streamlined Pad P/N 314-0018-01-S for assembly P/N 112-0002-00-S as applicable.

INSPECTION

Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:

Tables 5 & 6 – Tolerances for cracks & wear and

Annex B – BearPaw Allowable Damage Drawing 314-0018-01 (VNR-106) page 2 of 2 for Pocket pad or 314-0018-01-S (VNR106-S) page 3 of 3 for Streamlined Pad.

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 500 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the helicopter landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 500 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

500 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:

Tables 5 & 6 – Tolerances for cracks & wear and

Annex B – BearPaw Allowable Damage Drawing 314-0018-01 (VNR-106) page 2 of 2 for Pocket pad or 314-0018-01-S (VNR106-S) page 3 of 3 for Streamlined Pad.

Table 5 – Tolerances for Cracks & Wear / Pocket Pad 314-0018-01 (VNR 106)

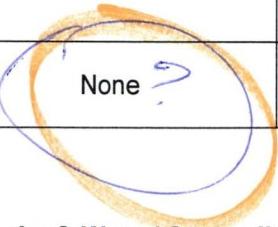
Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,50	None 	<u>Stiffeners:</u> NO cracks in stiffeners.

Table 6 – Tolerances for Cracks & Wear / Streamline Pad 314-0018-01-S (VNR 106-S)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050 	
B	1,000; and 0,88	0,250	
C	0,273 to 0,348 (variable thickness)	0,075 	<u>Pockets:</u> Cracks are acceptable in the pocket under the Helitowcart BearPaw to a maximum length of 0,5". Stop drill cracks with a 0,125" hole.

Overhaul Requirements

- Not applicable for the designated application of this device.

REVISIONS & APPROVAL

Revisions

Date	Rev	Nature of Revisions
Nov 20, 2006	A	Initial issue
Jan 29, 2007	B	Minor editorials. Change to weight & Balance Data to reflect production model. Change in inspection schedule from 300 to 500 hours to match existing landing gear periodicity.
Feb 28, 2008	C	Introduction of new streamline BearPaw Pad configuration as alternate.
Aug 01, 2008	D	Modification of vent holes on the streamline pad
April 8, 2010	E	Correction to C of G data
December 21, 2012	F	Updated Pad Tolerances and Document identifications . Improved page set up for reader convenience.

Approval

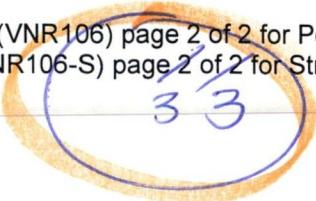
Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	Date: Dec 21, 2012
External Approval :		
Transport Canada	Mirko Zgela, DAR #310	Date: Dec 21, 2012

Annex A

See: BearPaw Assembly, drawing no. (112-0002-00) for Pocket style pad or;
 BearPaw Assembly, drawing no. (112-0002-00-S) for Streamline style pad

Annex B

See: BearPaw Pad, drawing no. 314-0018-01 (VNR106) page 2 of 2 for Pocket style pad or;
 BearPaw Pad, drawing no. 314-0018-01-S (VNR106-S) page 2 of 2 for Streamline style pad.



Page 10 of 18



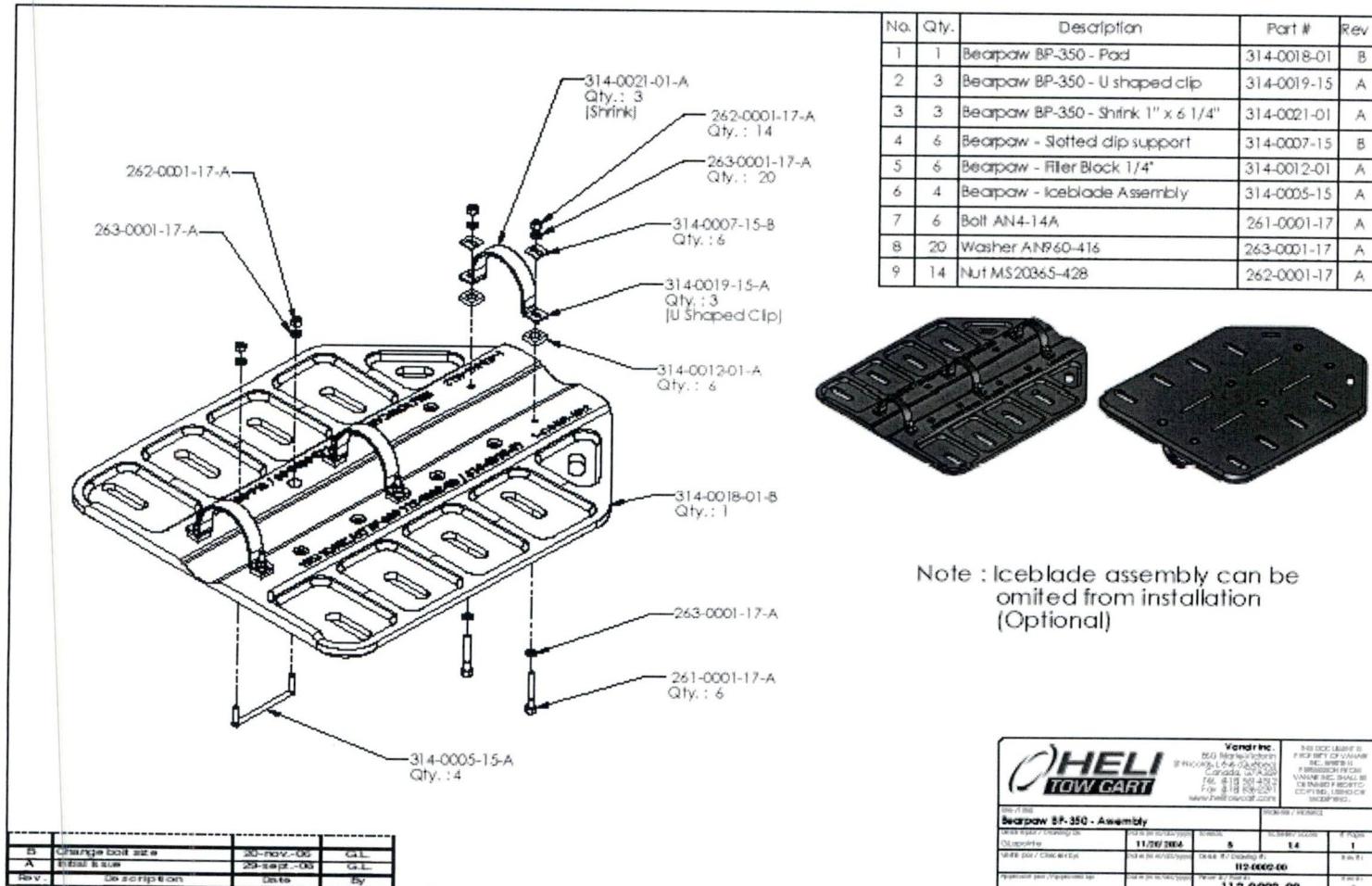
314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355

Annex A

BearPaw Assembly, Drawing no. 112-0002-00.

Installation Instructions – AS350/355

314-0020-00-E Rev. F
BearPaw Model BP350

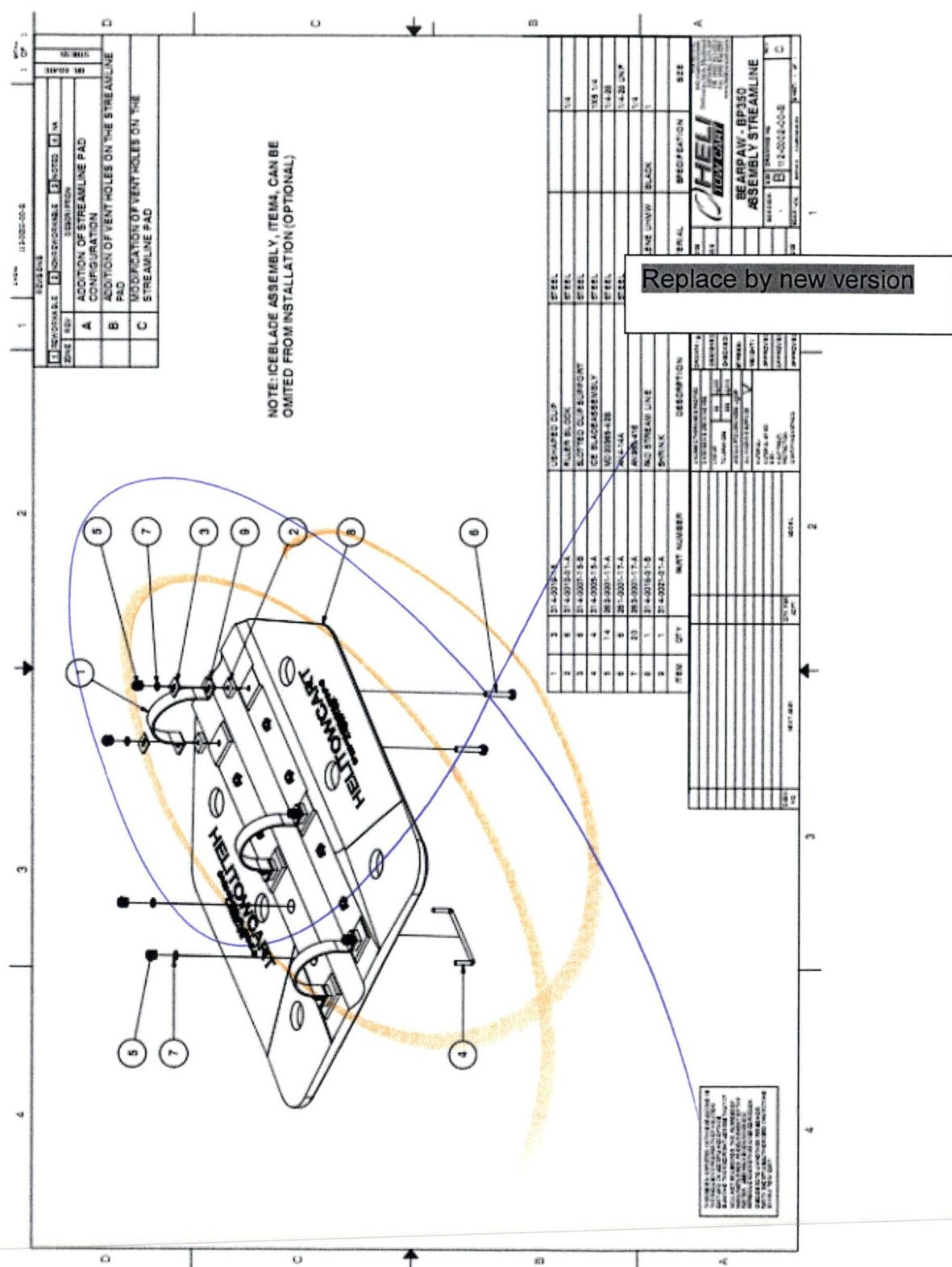




314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355

Annex A

BearPaw Assembly, Drawing no. P/N 112-0002-00-S.





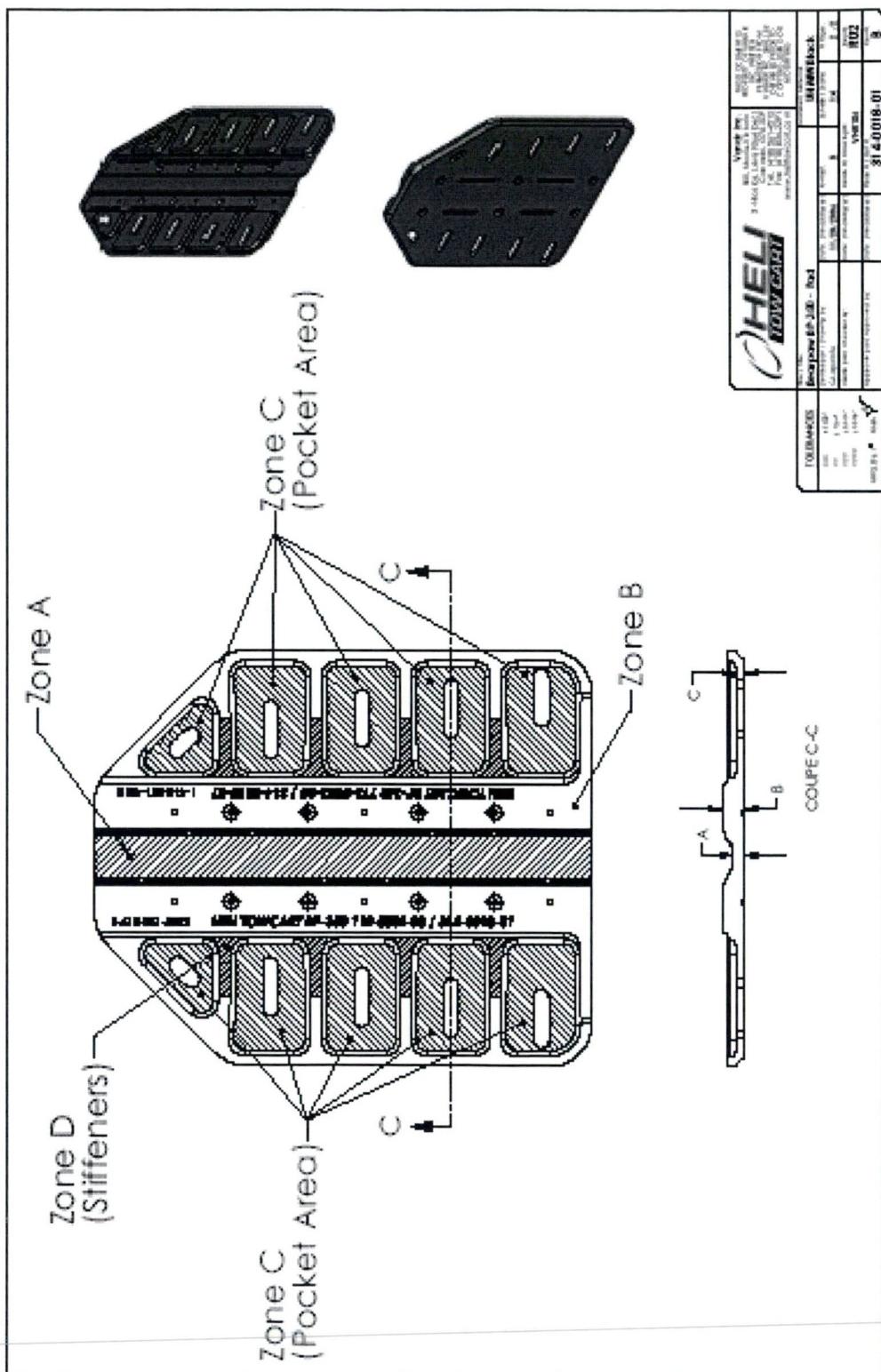
314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355

Annex B

BearPaw Pad, Drawing no. 314-0018-01 (VNR106) Page 2 of 2 Pocket Style Pad.

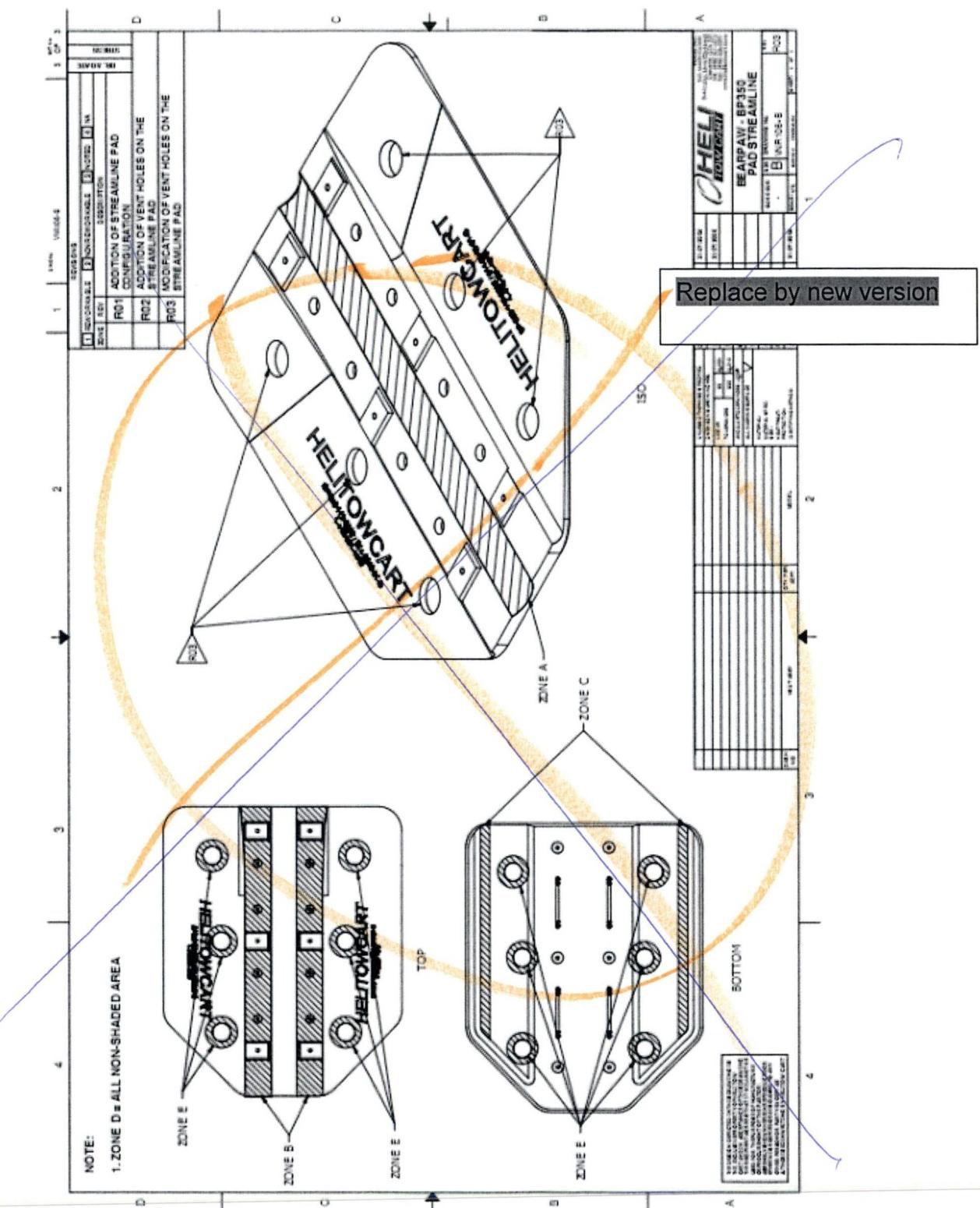
Page 15 of 18

Tel: 1-418-561-4512, Fax: 1-418-836-2291, 860 Marie-Victorin, Saint-Nicolas, Lévis, Québec, Canada G7A 3S9.
www.helitowcart.com info@helitowcart.com



Annex B

BearPaw Pad, Drawing no. 314-0018-01-S (VNR106-S) Page 3 of 3 Streamline Style Pad.



4

3

1

DWJ No 112-0002-00

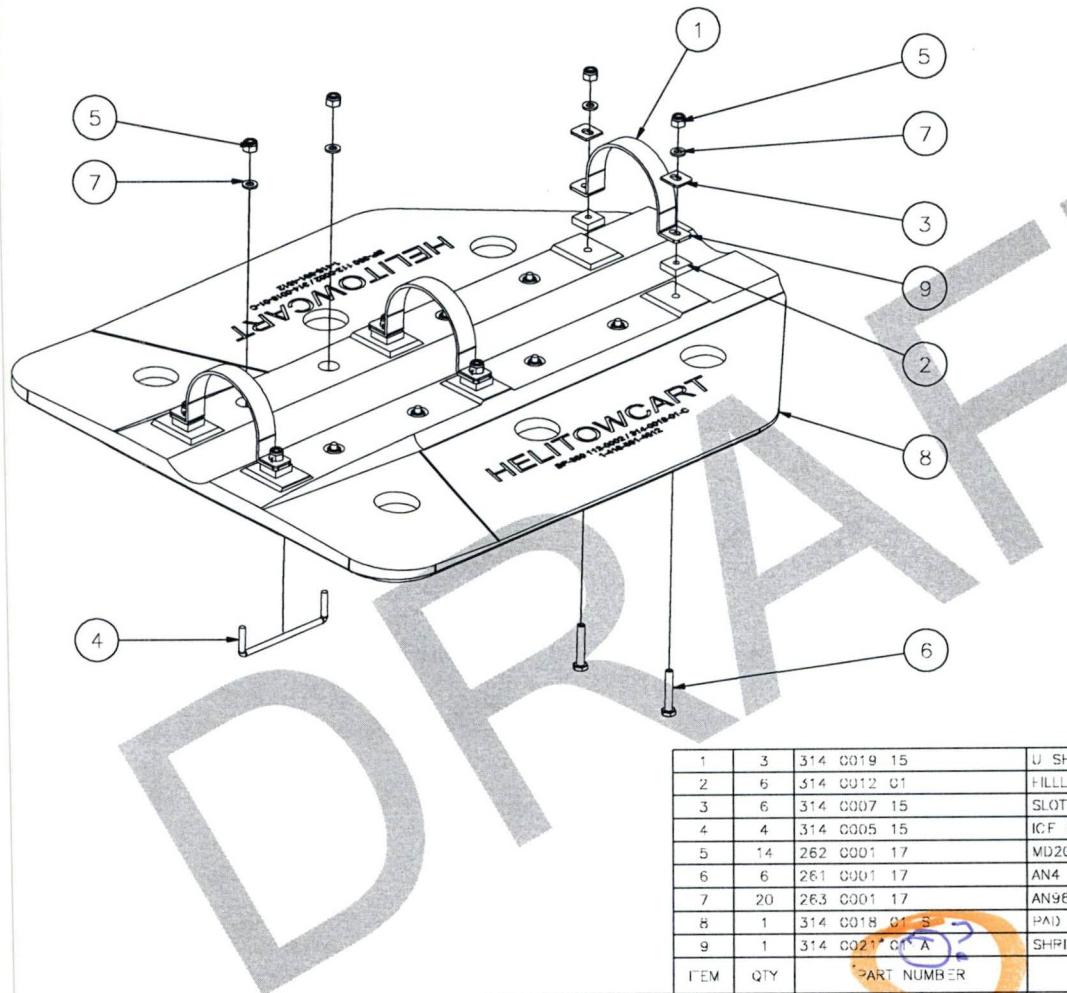
1 OF

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C

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A



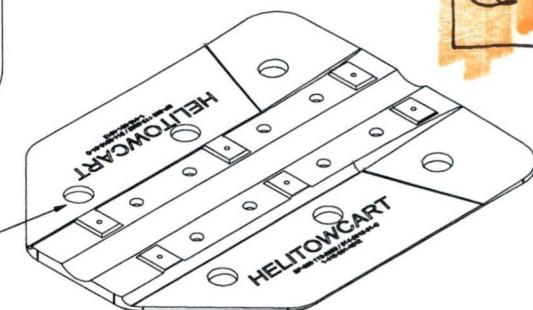
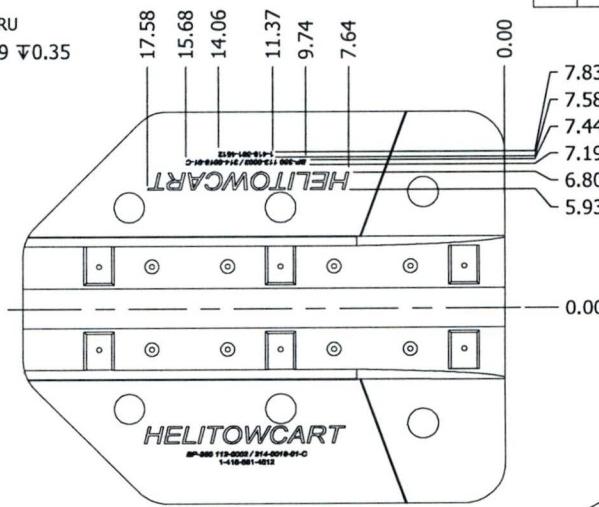
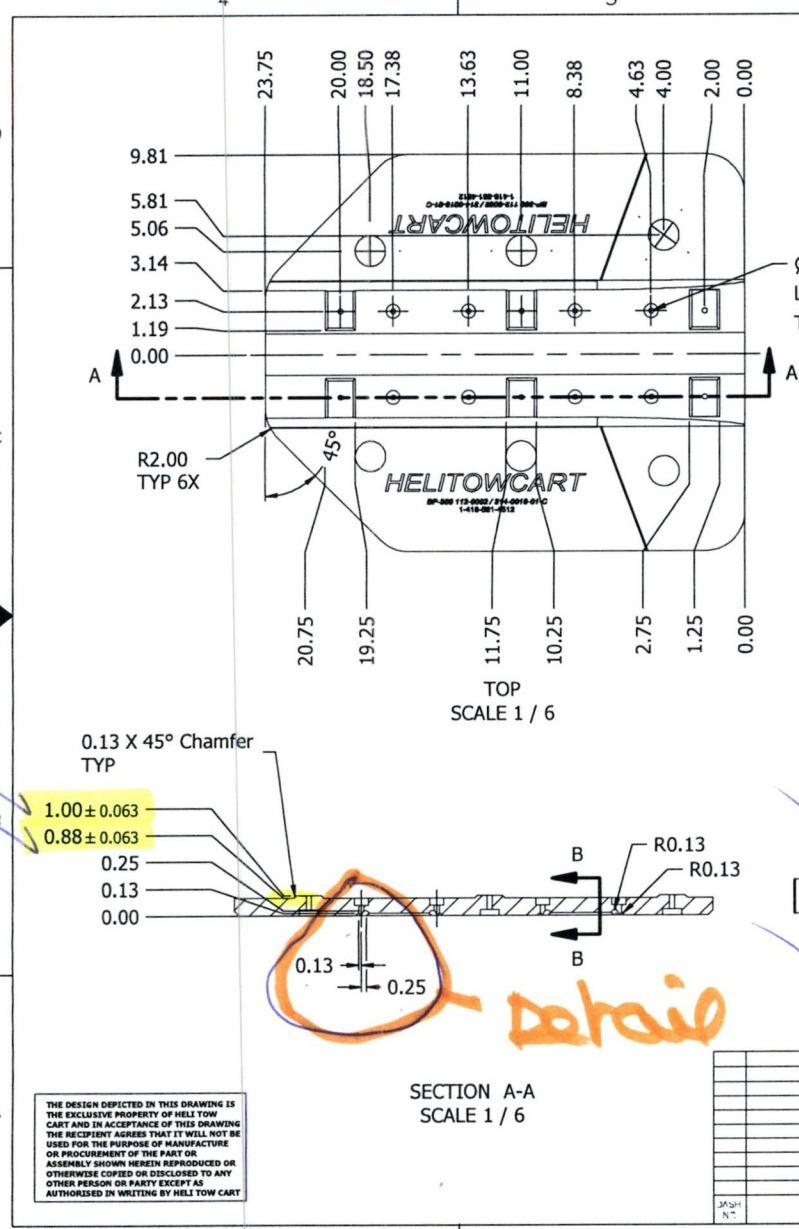
NOTE: ICEBLADE ASSEMBLY, ITEM 4,
CAN BE OMITTED FROM INSTALLATION
(OPTIONAL)

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE
1	3	314 C019 15	U SHAPE CLIP	STEEL		
2	6	314 C012 C1	FILLER BLOCK	STELL		1/4
3	6	314 C007 15	SLOTTED CLIP SUPPORT	STEEL		
4	4	314 C005 15	ICF BLADF ASSMBLY	STFFL		1X6 1/4
5	14	262 C001 17	MD20365 42B	STEEL		1/4 28
6	6	261 C001 17	AN4 14A	STEEL		1/4 28 UNI
7	20	263 C001 17	AN960 416	STEEL		1/4
8	1	314 C018 C1 S	PAD STREAM LINE	POLYET-YLENE JHMW	BLACK	1
9	1	314 C021 C1 A	SHRINK			

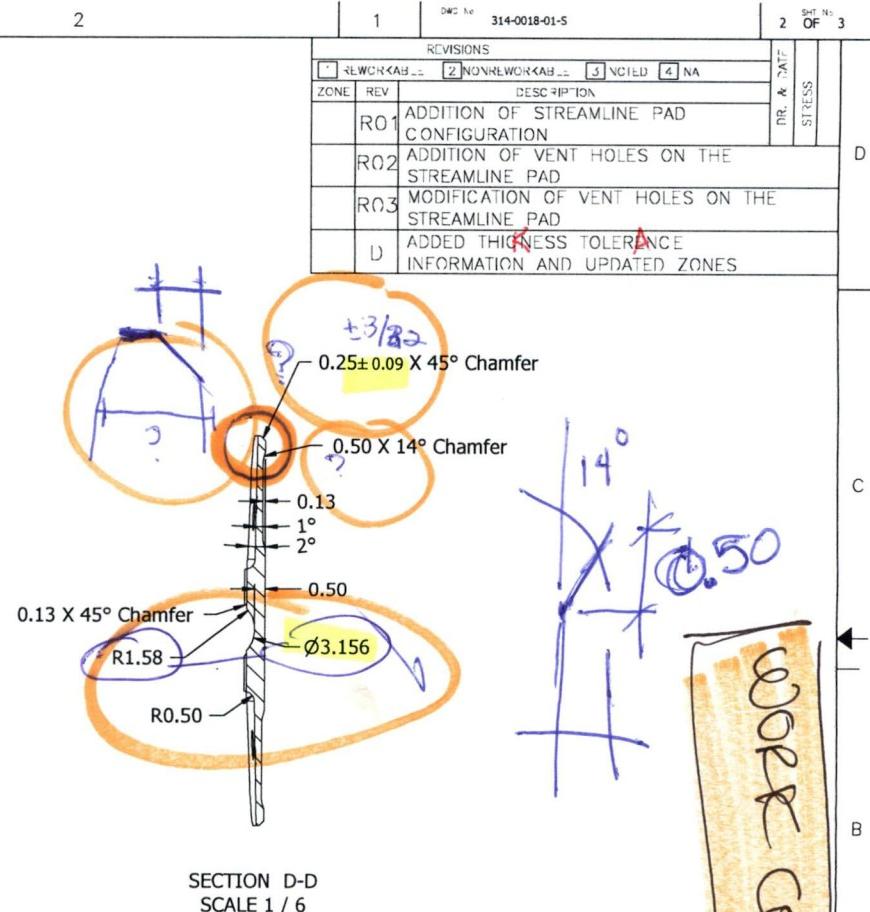
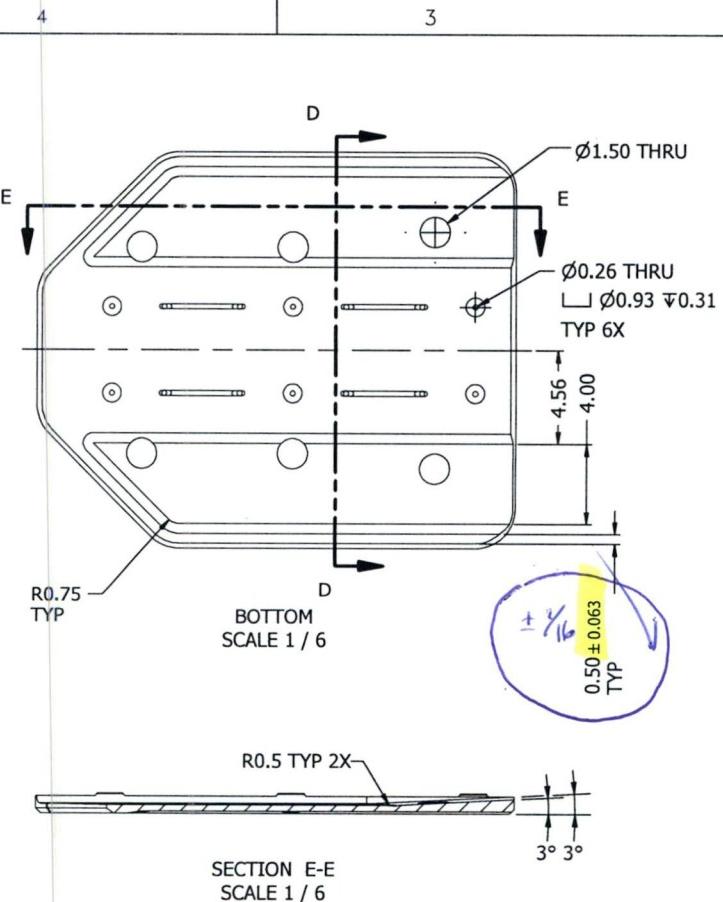
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DRAWING THE RECIPIENT AGREES THAT IT
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4

五



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NOTES OR COMMENTS IF REQUIRED	DRAWN: S. BERNER	2104/07/31
DIMENSIONS ARE IN INCHES.	DESIGNED: S. BERNER	2007/07/31
YEAR	2007	2007
OLD/NEW: LS	X	X
SECTION: 1/1		
PRINTING: 10 TRANS. 24 X 36"	STRESS:	
PRINT MACHINING: ✓	ALIGHT:	
VAL. DATE:	APPROVED:	
MATERIAL: STAINLESS STEEL	APPROV'D:	
HEAT TREAT:	DATE APPROV'D:	
PROT. LOC:	APPROV'D:	
IDENTIFYING METHOD:	APPROV'D: M. ZOE'A	2007/07/31
	REVISIONS:	D
	FILE #:	
	SHFT #:	

HELICARTS INC.
160 Main Street
St. Jacobs, Ontario N0B 1L0
TEL: (519) 661-2512
FAX: (519) 661-2571
www.helicarts.ca

BEARPAW - BP350
PAD STREAMLINE

314-0018-01-S
(VNR 106-S)

4

3

2

1

A

X

<p style="text-align: center;">4</p> <p style="text-align: center;">3</p> <p style="text-align: center;">D</p> <p>TOP</p> <p>ZONE B</p> <p>ZONE C</p> <p>BOTTOM</p> <p>ZONE C</p> <p>?</p> <p><small>THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELITOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSES OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON WITHOUT THE WRITTEN AUTHORIZATION IN WRITING BY HELITOW CART</small></p>	<p style="text-align: center;">2</p> <p style="text-align: center;">1</p> <p style="text-align: center;">Dwg No 314-0018-01-S</p> <p style="text-align: center;">3 SHT OF 3</p> <p style="text-align: center;">REV A DATE 11/12/2002</p> <p style="text-align: center;">REVISIONS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>ZONE</th> <th>REV</th> <th>DESCRIPTION</th> <th>MR & STRESS</th> </tr> <tr> <td>R01</td> <td></td> <td>ADDITION OF STREAMLINE PAD CONFIGURATION</td> <td></td> </tr> <tr> <td>R02</td> <td></td> <td>ADDITION OF VENT HOLES ON THE STREAMLINE PAD</td> <td></td> </tr> <tr> <td>R03</td> <td></td> <td>MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD</td> <td></td> </tr> <tr> <td>D</td> <td></td> <td>ADDED THICKNESS TOLERANCE INFORMATION AND UPDATED ZONES</td> <td></td> </tr> </table> <p style="text-align: center;">D</p> <p style="text-align: center;">C</p> <p style="text-align: center;">B</p> <p style="text-align: center;">A</p> <p style="text-align: center;">ISO</p> <p style="text-align: center;">ZONE A</p> <p style="text-align: right;">Work Copy</p>	ZONE	REV	DESCRIPTION	MR & STRESS	R01		ADDITION OF STREAMLINE PAD CONFIGURATION		R02		ADDITION OF VENT HOLES ON THE STREAMLINE PAD		R03		MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD		D		ADDED THICKNESS TOLERANCE INFORMATION AND UPDATED ZONES		<p style="text-align: center;">4</p> <p style="text-align: center;">3</p> <p style="text-align: center;">2</p> <p style="text-align: center;">1</p> <p style="text-align: center;">Dwg No 314-0018-01-S</p> <p style="text-align: center;">3 SHT OF 3</p> <p style="text-align: center;">REV A DATE 11/12/2002</p> <p style="text-align: center;">BEARPAW - BP350 PAD STREAMLINE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">NOM. OF LINES: 5 REFERRED</td> <td style="width: 15%;">DRAWN: S. BERNIER</td> <td style="width: 15%;">2002/07/31</td> </tr> <tr> <td>DIMENSIONS ARE IN INCHES.</td> <td>DESIGNER: S. BERNIER</td> <td>2002/07/31</td> </tr> <tr> <td>JIGS: X</td> <td>CHECKED:</td> <td></td> </tr> <tr> <td>STAMPS: X</td> <td>APPROVED:</td> <td></td> </tr> <tr> <td>COLLARS: X</td> <td>APPROV'D:</td> <td></td> </tr> <tr> <td>ANNUAL INSPECTION: 10/31</td> <td>STRESS:</td> <td></td> </tr> <tr> <td>ALL MACHINED SURFACES ✓</td> <td>WEIGHT:</td> <td></td> </tr> <tr> <td>MA. LINE:</td> <td>APPROVED:</td> <td></td> </tr> <tr> <td>MATERIAL: SP-300</td> <td>APPROV'D:</td> <td></td> </tr> <tr> <td>SH:</td> <td>APPROV'D:</td> <td></td> </tr> <tr> <td>HEAT TREAT:</td> <td>APPROV'D:</td> <td></td> </tr> <tr> <td>CAST IRON:</td> <td>APPROV'D:</td> <td></td> </tr> <tr> <td>FINISHING METHOD:</td> <td>APPROV'D:</td> <td></td> </tr> <tr> <td>REMARKS:</td> <td>APPROV'D:</td> <td></td> </tr> <tr> <td>APPROVED: M. ZELA</td> <td>APPROV'D:</td> <td></td> </tr> <tr> <td>DATE: 2002/07/31</td> <td>APPROV'D:</td> <td></td> </tr> <tr> <td>FILE NO:</td> <td>APPROV'D:</td> <td></td> </tr> <tr> <td>REV D</td> <td>APPROV'D:</td> <td></td> </tr> </table> <p style="text-align: center;">Variant Inc. 5440 N. Mayfield Suite 100 Commerce City, CO 80022 Tel: (303) 277-2212 Fax: (303) 277-2291 www.helitowcart.com</p> <p style="text-align: right;">OHeli Tow Cart</p>	NOM. OF LINES: 5 REFERRED	DRAWN: S. BERNIER	2002/07/31	DIMENSIONS ARE IN INCHES.	DESIGNER: S. BERNIER	2002/07/31	JIGS: X	CHECKED:		STAMPS: X	APPROVED:		COLLARS: X	APPROV'D:		ANNUAL INSPECTION: 10/31	STRESS:		ALL MACHINED SURFACES ✓	WEIGHT:		MA. LINE:	APPROVED:		MATERIAL: SP-300	APPROV'D:		SH:	APPROV'D:		HEAT TREAT:	APPROV'D:		CAST IRON:	APPROV'D:		FINISHING METHOD:	APPROV'D:		REMARKS:	APPROV'D:		APPROVED: M. ZELA	APPROV'D:		DATE: 2002/07/31	APPROV'D:		FILE NO:	APPROV'D:		REV D	APPROV'D:	
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FAX TRANSMISSION

Date: 2002 12 11

Pages: 22

To: SIMON BERNIER

Fax: 819-377-7928

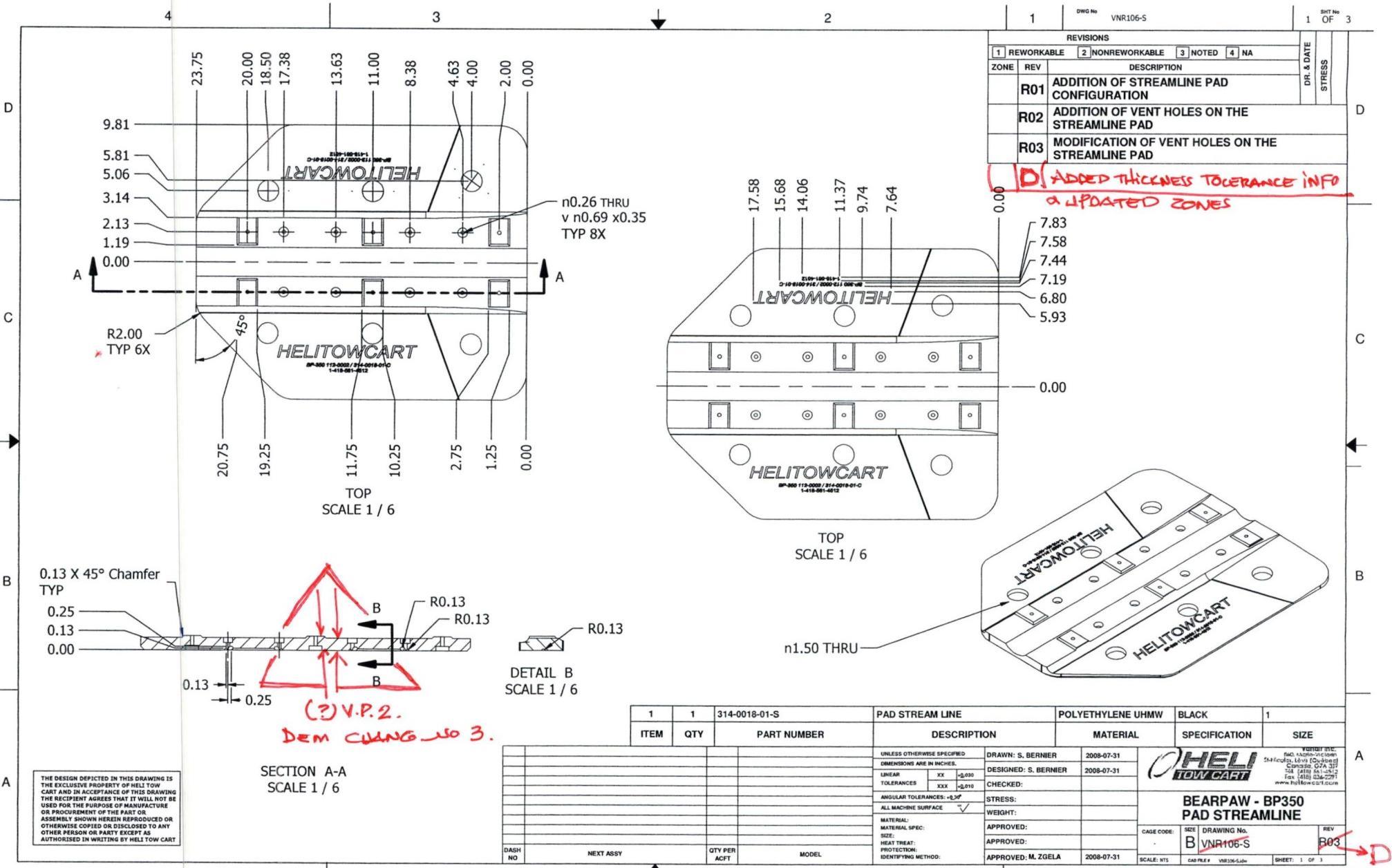
From: Nathalie Barbeau

Object: MISE À NIVEAU - DOC. ENG. - BP350

Simon,

- TROUVE CI-JOINT MA LISTE DE MODIFS PRÉ-IDENTIFIÉS SUR NOS DOCUMENTS RESPECTIFS.
- POUR T'AIDER J'AI ENCECRCLÉ LES ^{NO DE} PAGES QUI REQUIERENT MODIFS. T.Q DISCUÉ, JE PEUX FAIRE MODIFS TEXTUELLES MOI-MÊME.
- DOCUMENTS IMPLICQUÉS:
 - 1) MDL
 - 2) INSTALL. INSTR (314-0020-00)
 - 3) DWG - (112-0002-00 S)
 - 4) DWG - (314-0018-01 S) = ANCIENNEMENT NOMMÉ: VNK 10G-S
- POUR DISCUSSIONS TECHNIQUES AVEC MACHINISTE, APPELER STÉPHANE Poulin CHEZ AMEC. 418-878-4133
JE PRÉFÈRE QUE TU DISCUITES DES TOUS DE FABRICATION À AJUSTER, DIRECTEMENT AVEC LUI :)

Merci!

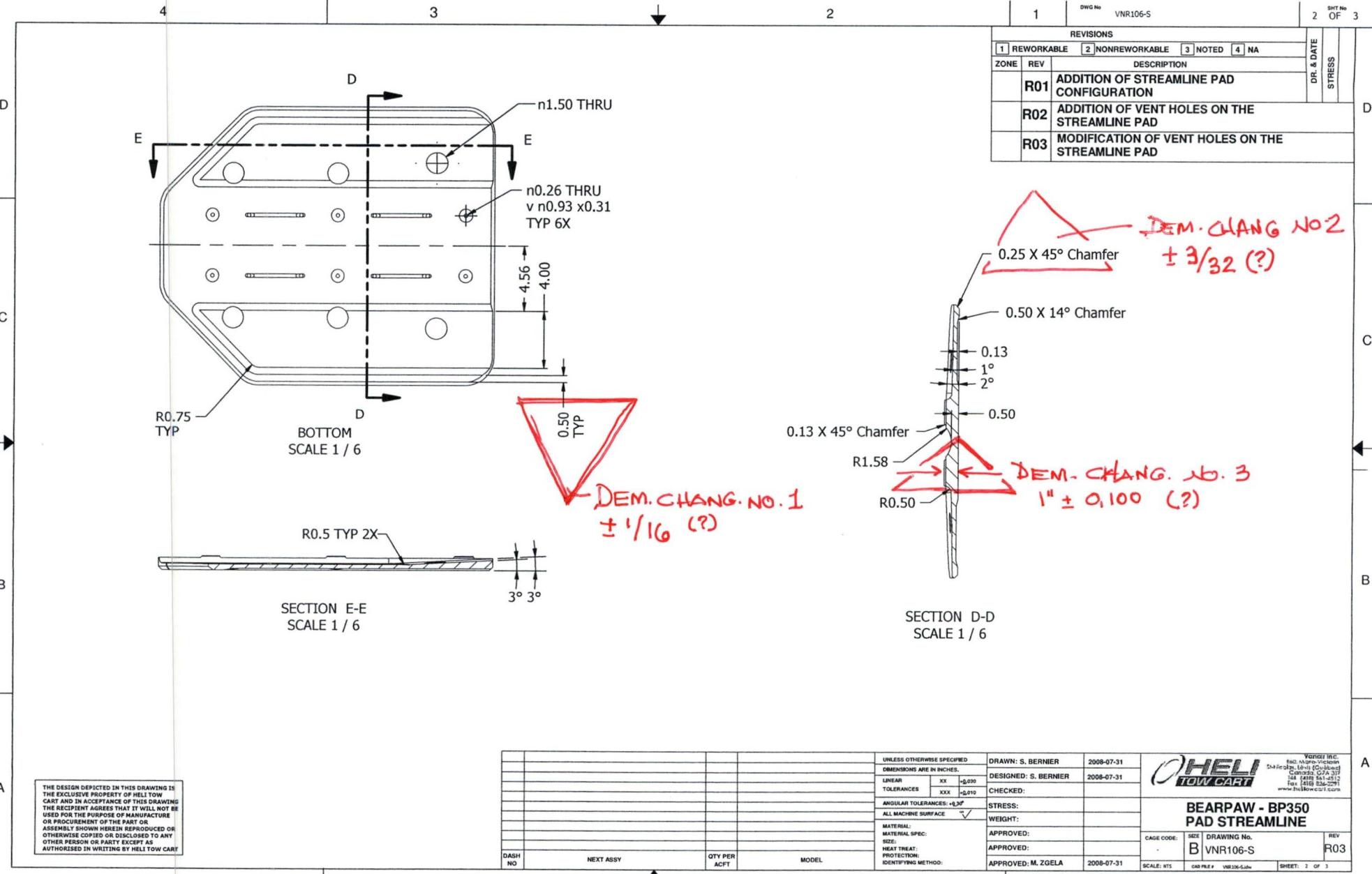


4

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DWG No
VNR106-SSHT No
OF
3

4

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A

4	3	2	1
D		D	
C		C	
B		B	
A		A	

NOTE:
1. ZONE D = ALL NON-SHADED AREA
(?)

DEM. CHANG. NO 4 :
ZONES B, C, D, E À REDEFINIR
PAR SIMON BERNIER

REVISIONS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722
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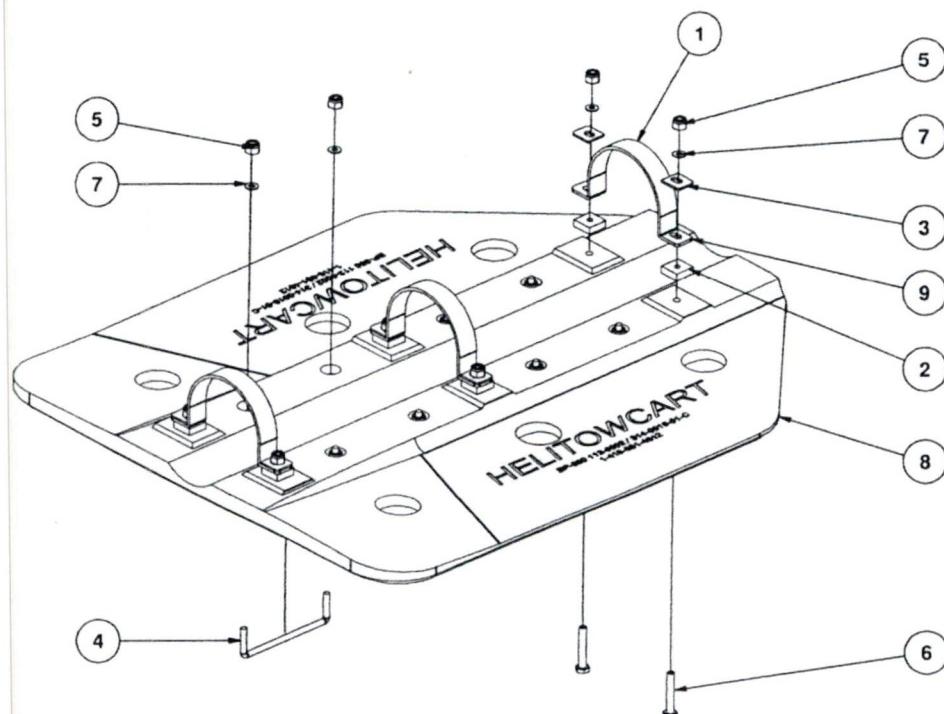
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| D | Revisions Cleared from P/N identifications

NOTE: ICEBLADE ASSEMBLY, ITEM4, CAN BE OMITTED FROM INSTALLATION (OPTIONAL)

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-TAKE REVISIONS OFF

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE
1	3	314-0019-15	U SHAPED CLIP	STEEL		
2	6	314-0012-01A	FILLER BLOCK	STEEL		1/4
3	6	314-0007-15B	SLOTTED CLIP SUPPORT	STEEL		
4	4	314-0005-15A	ICE BLADE ASSEMBLY	STEEL		1X6 1/4
5	14	262-0001-17A	MD20365-42B	STEEL		1/4-28
6	6	261-0001-17A	AN4-14A	STEEL		1/4-28 UNF
7	20	263-0001-17A	AN960-416	STEEL		1/4
8	1	314-0018-01-S	PAD STREAM LINE	POLYETHYLENE UHMW	BLACK	1
9	1	314-0021-01A	SHRINK			

DASH NO.	NEXT ASSY	GTY PER ACFT	MODEL	UNLESS OTHERWISE SPECIFIED	DRAWN: S. BERNIER	2008-07-31	OH HELI TOW CART <small>154 Avenue, Laval (Quebec) Canada, G7A 3P Tel: 450 654-2291 Fax: 450 654-2291 www.helitowcart.com</small>
DIMENSIONS ARE IN INCHES.				DESIGNED: S. BERNIER		2008-07-31	
LINEAR TOLERANCES: ± 0.005				CHECKED:			
TOLERANCES: ± 0.010				STRESS:			
ANGULAR TOLERANCES: $\pm 1^\circ$				ALL MACHINE SURFACE			
				WEIGHT:			
				MATERIAL:	APPROVED:		
				MATERIAL SPEC:			
				SIZE:	APPROVED:		
				HOT TREAT:	APPROVED:		
				PROTECTION:	APPROVED:		
				IDENTIFYING METHOD:	APPROVED: M. ZGELA	2008-07-31	
					SCALE: 1:1	COPY PAGE: 112-0002-00-S	
					REV: C	SHEET: 1 OF 1	

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M. Bartsch 08.08.04



Master Document List

Helitowcart

Eurocopter Model AS 350/355 Series Helicopters Installation of BearPaw Model BP350

Report: HTC-MDL-BP-AS350/355-1000 (Rev F) *G*

APPROVED BY:

Mirko Zgela

Design Approval Representative DAR #310

DATE: *NEW DATE*

~~APRIL 8, 2010~~

Revision	Revision Date	Revision of Entry	Entered by
A	Nov 22, 2006	Initial issue	N/A
B	Jan 28, 2007	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
C	Feb 28, 2007	Addition of streamline pad configuration. Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
D	July 27, 2008	Addition of vents holes in the streamline pad.	M.Z.
E	Aug 01, 2008	Modification of vents holes in the streamline pad.	M.Z.
F	April 8, 2010	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.

G

TBD

- ADDED TOLERANCE INFO TO PAD M.Z.
- UPDATED DOCUMENT IDENT. & REV. M.Z.

Page 1/3



1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355-1000	Compliance Plan – Eurocopter Model AS350/355 Series Helicopters – Installation of BearPaw Model BP350	NC	DAR 310	Nov 22, 2006
HTC-314-0020-00	BearPaw Model BP350 – Installation Instructions – AS350/355 Series Helicopters	E F	DAR 310	April 8, 2010 NEW DATE
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	A	DAR 310	July 31, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	A	DAR 310	July 31, 2008

2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
112-0002-00-S	BearPaw BP350 – Assembly Streamline	C D	DAR 310	July 31, 2008 NEW DATE
(VNR084) 314-0002-15	BearPaw – Iceblade	A (R01)	DAR 310	Apr 24, 2006
(VNR085) 314-0004-15	BearPaw – Iceblade Threaded Rod	A (R01)	DAR 310	Apr 24, 2006
(VNR086) 314-0005-15	BearPaw – Iceblade Assembly	A (R01)	DAR 310	Apr 24, 2006
(VNR106) 314-0018-01	BearPaw BP350 - Pad	B (R02)	DAR 310	Sept 26, 2006
(VNR106-S) 314-0018-01-S	BearPaw BP350 – Pad Streamline	F R03 D	DAR 310	July 31, 2008 NEW DATE
(VNR107) 314-0019-15	BearPaw BP350 – U Shaped Clip	A (R01)	DAR 310	Sept 29, 2006
(VNR089) 314-0007-15	Bearpaw – Slotted Clip Support	B (R04)	DAR 310	July 31, 2006
(VNR099) 314-0012-01	Filler Block 1/4"	A (R01)	DAR 310	Aug 8, 2006

↑ ENLEVER R03, SEUL. LETTRE
 Mettre en petit caractère entre parenthèses
 après le numéro de dessin et la révision
 Alphabétique .



3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Material Properties - UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006

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Overhaul Requirements	p.6
REVISIONS & APPROVAL	p.7
Annex A (BearPaw Assembly Drawing)	
Annex B (BearPaw Pad Drawing)	

*UPDATE FOLLOWING
MODIFS REQ'D
IN FOLLOWING PAGES*



314-0020-00-E
BearPaw Model BP350
Installation Instructions – AS350/355

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw Model BP 350 (P/N 112-0002-00 or P/N 112-0002-00-S) for the AS 350 and AS 355 series helicopters.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance when installed on your helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291- 836 ⁸³⁶ -4575 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following helicopter models:

Table 2 – Helicopter Model Effectivity

Make	Model	Transport Canada Type Certificate Data Sheet
Eurocopter	AS 350 D	H-83
Eurocopter	AS 350 D1	
Eurocopter	AS 350 B	
Eurocopter	AS 350 B1	
Eurocopter	AS 350 B2	
Eurocopter	AS 350 B3	
Eurocopter	AS 350 BA	
Eurocopter	AS 355 E	
Eurocopter	AS 355 F	
Eurocopter	AS 355 F1	
Eurocopter	AS 355 F2	H-87
Eurocopter	AS 355 N	

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Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION

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BearPaw Installation

Reference Documentation:

- [1] Helicopter Maintenance Manual AS 350 or AS 355 as applicable.

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] as applicable to your helicopter model to allow a ground clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the skid tube wear shoes.

Step 2: IceBlade Installation

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the IceBlades

- With IceBlade Option
- Install ice blades (Qty: 4) (Iceblades P/N 314-0005-15) under BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A.
- Secure ice blades with washer (Washer P/N 263-0001-17) and nut (P/N 262-0001-17).

Step 3: BearPaw Installation

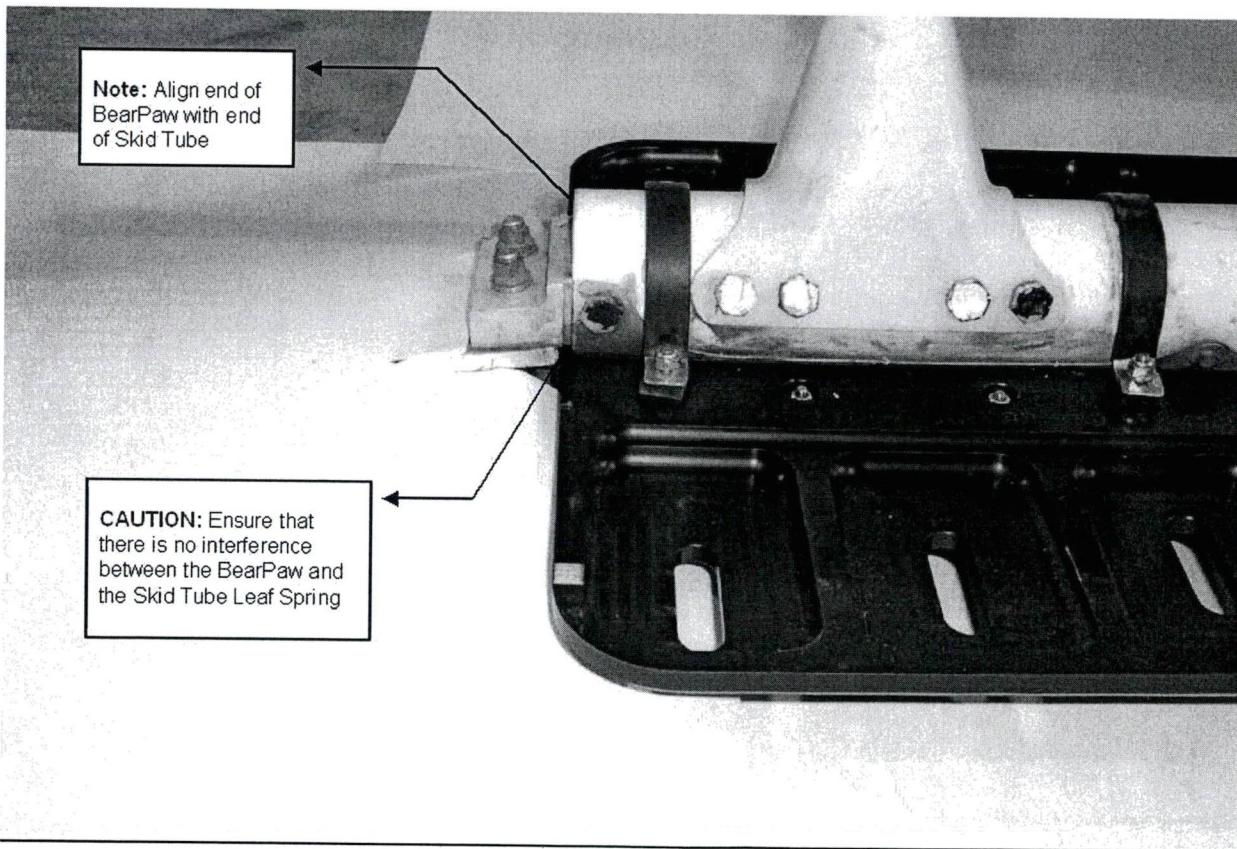
- Position the BearPaw under the skid as shown in Figure 1 with narrow edge pointing forward.
- Insert washers (P/N 263-0001-17) through all six bolts: 6x(261-0001-17);
- Insert bolts (P/N 261-0001-17) and washer (Washer P/N 263-0001-17) through BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;
- Insert filler blocks (P/N314-0012-01) as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;

Note: The use of filler blocks (P/N314-0012-01) may be replaced or complemented by the use of washers (P/N 263-0001-17) to fill in the gap. Bolts (P/N 261-0001-17) may be replaced by longer or shorter AN4 bolts as required.

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- Insert both U-shaped clips (P/N 314-0019-15) through bolts: 6x(261-0001-17);
- Insert slotted clip supports (P/N 314-0007-15) through all six bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 – BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) - Alignment on Skid





314-0020-00-E
BearPaw Model BP350
Installation Instructions – AS350/355

BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), slotted clip support (P/N 314-0007-15) on U-shaped clips (P/N 314-0019-15),
- Remove washers (P/N 263-0001-17), U-shaped clips (P/N 314-0019-15), filler blocks (P/N 314-0012-01), and remove BearPaw pad (P/N 314-0018-01); *use P/N 314 0018 01 S - Streamline*
- Inspect skid tubes to confirm serviceability
- If the skid tube shoes have been removed, re-install shoes as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required using data provided in Table 3.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP350 (P/N 112-0002-00)	19,9 Lb 9,0 Kg	N/A	N/A	159,4 in. 404.9 cm	3172.0 in-lb 36.44 m-kg
Helitowcart BearPaw Model BP350 - Streamline (P/N 112-0002-00-S)	18,3 Lb 8,5 Kg	N/A	N/A	159,4 in. 404.9 cm	2917.0 in-lb 34.41 m-kg

Note: Weight and moment provided are for full kit installation.

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Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

*DO NOT BREAK TABLES
 ON 2 PAGES*

Table 4 – Parts List

Description	Qty	Part / Dwg No:	Drawing no./name
BearPaw Model BP350	1	112-0002-00	VNR(112-0002-00) / BearPaw Assembly, OR VNR (112-0002-00-S) /Bear Paw Streamline Assembly
BearPaw pad ⁽¹⁾	1	314-0018-01	VNR106 / BearPaw BP350 – Pad
BearPaw pad streamline ⁽¹⁾	1	314-0018-01S	VNR106S / BearPaw BP350 – Pad Streamline
U Shaped Clips	3	314-0019-15	VNR107 / BearPaw BP350 - U Shaped Clips
Slotted Clip Support	6	314-0007-15	VNR089 / BearPaw - Slotted Clip Support

TABLE 6 - TOLERANCES FOR CRACKS & WEAR
STREAMLINE
FOR PAP 314-0018-01-S (VNR 1065)

ZONE	NOMINAL DIM (Inches)	ALLOWABLE DAMAGE/WEAR (Inches)	CRACKS

↑ TO BE FILLED BY SIMON BERNIER

Filler blocks 1/4"	6	314-0012-01	VNR099 / BearPaw – Filler block 1/4"
Bolts	6	261-0001-17	Bolt- AN4-14
Nuts	6	262-0001-17	Nut- MS20365-428
Washers	12	263-0001-17	Washer – AN960-416
Shrink	3	314-0021-01	BearPaw – Shrink Specifications & Install.(1"x6.25")
IceBlade Option Model OIB	4	314-0005-15	VNR086 / IceBlade Assembly
Nuts	8	262-0001-17	Nut- MS20365-428
Washers	8	263-0001-17	Washer – AN960-416

Note (1): Use BearPaw Pad P/N 314-0018-01 for VNR P/N 112-0002-00 and BearPaw Pad P/N 314-0018-01-S for VNR P/N 112-0002-00-S as applicable.

INSPECTION

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Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:

Table 5 – Tolerances for cracks & wear and *314-0018-01 (VNR 106)*, *314-0018-01-S*
Annex B – BearPaw Allowable Damage Drawing (VNR 106 page 2 of 2 or *VNR 106S* page 2 of 2).

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 500 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the helicopter landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 500 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

500 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:

Table 5 – Tolerances for cracks & wear, &
Annex B – BearPaw Allowable Damage Drawing (VNR 106 page 2 of 2 or *VNR 106S* page 2 of 2).

Do NOT BREAK TABLE ON 2 PAGES.

Table 5 – Tolerances for Cracks & Wear *FOR 314-0018-01 (VNR 106)*

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000	0,250	



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C	0,375	0,075	<u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,50	None	<u>Stiffeners:</u> NO cracks in stiffeners.
E	0,375	0,075	For P/N 112-0002-00-S Only

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? }

→ TO BE UPDATED BY SIMON BERNIER

Overhaul Requirements

- Not applicable for the designated application of this device.

— → PAGE BREAK —

REVISIONS & APPROVAL

Revisions

Date	Rev	Nature of Revisions
Nov 20,2006	A	Initial issue
Jan 29, 2007	B	Minor editorials. Change to weight & Balance Data to reflect production model. Change in inspection schedule from 300 to 500 hours to match existing landing gear periodicity.
Feb 28, 2008	C	Introduction of new streamline BearPaw Pad configuration as alternate.
Aug 01, 2008	D	Modification of vent holes on the streamline pad
April 8, 2010	E	Correction to CofG data

By SIMON →

| F |

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	April 8, 2010 Date:
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	April 8, 2010 Date:



314-0020-00-E
BearPaw Model BP350
Installation Instructions – AS350/355

Annex A

See: BearPaw Assembly, drawing no. (112-0002-00) or;
BearPaw Assembly, drawing no. (112-0002-00-S)

Annex B

See: BearPaw Pad, drawing no. VNR106: Page 2 of 2 or;
BearPaw Pad, drawing no. ~~VNR106-S~~: Page 2 of 2.

314-0018-01 (VNR106)
314-0018-01-S (VNR106-S)



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BearPaw Model BP350
Installation Instructions – AS350/355

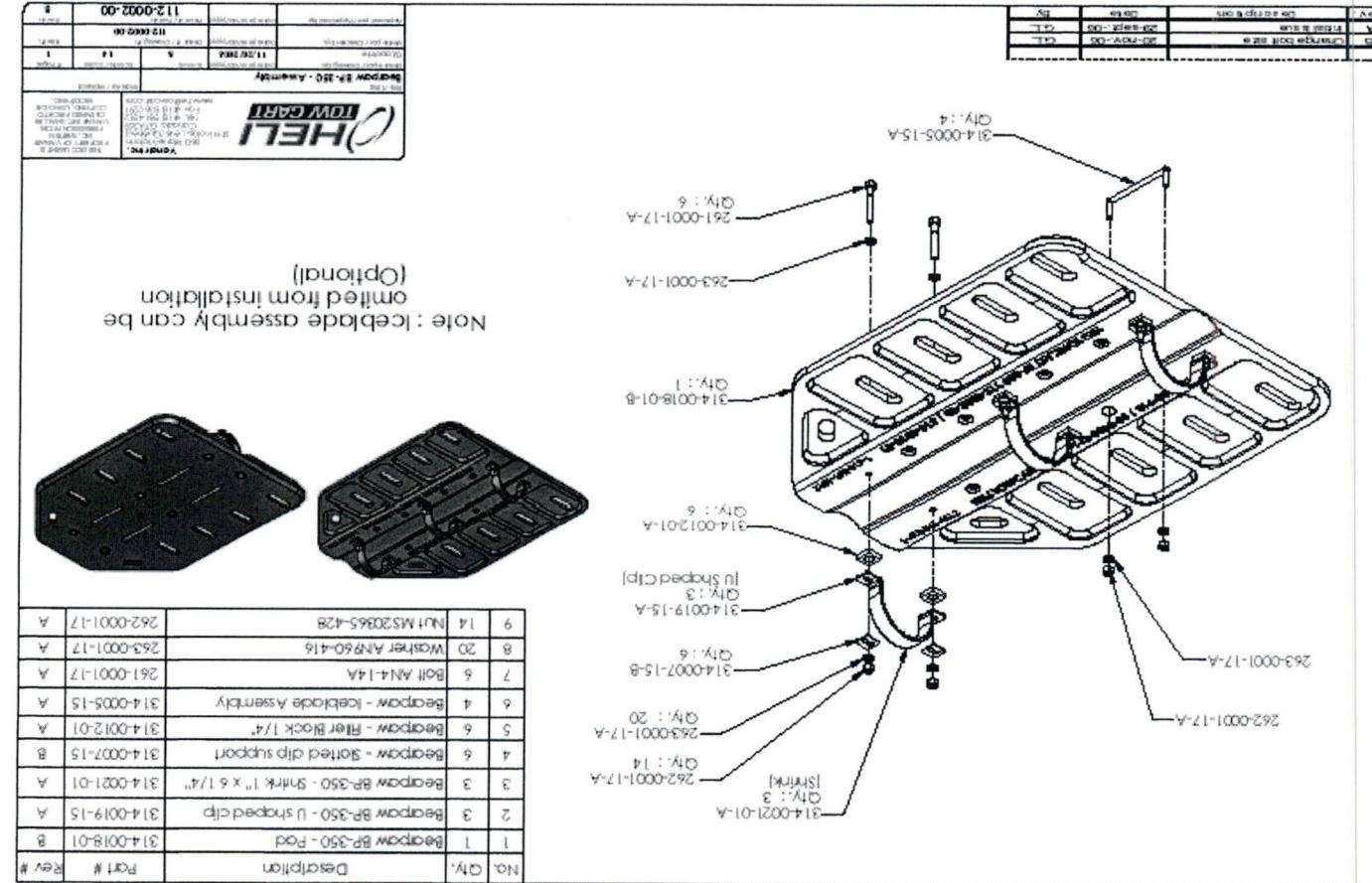
Annex A

BearPaw Assembly, Drawing no. ~~VNR~~(112-0002-00),
P/N 112-0002-00



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BearPaw Model BP350
Installation Instructions – AS350/355

By VANAIR





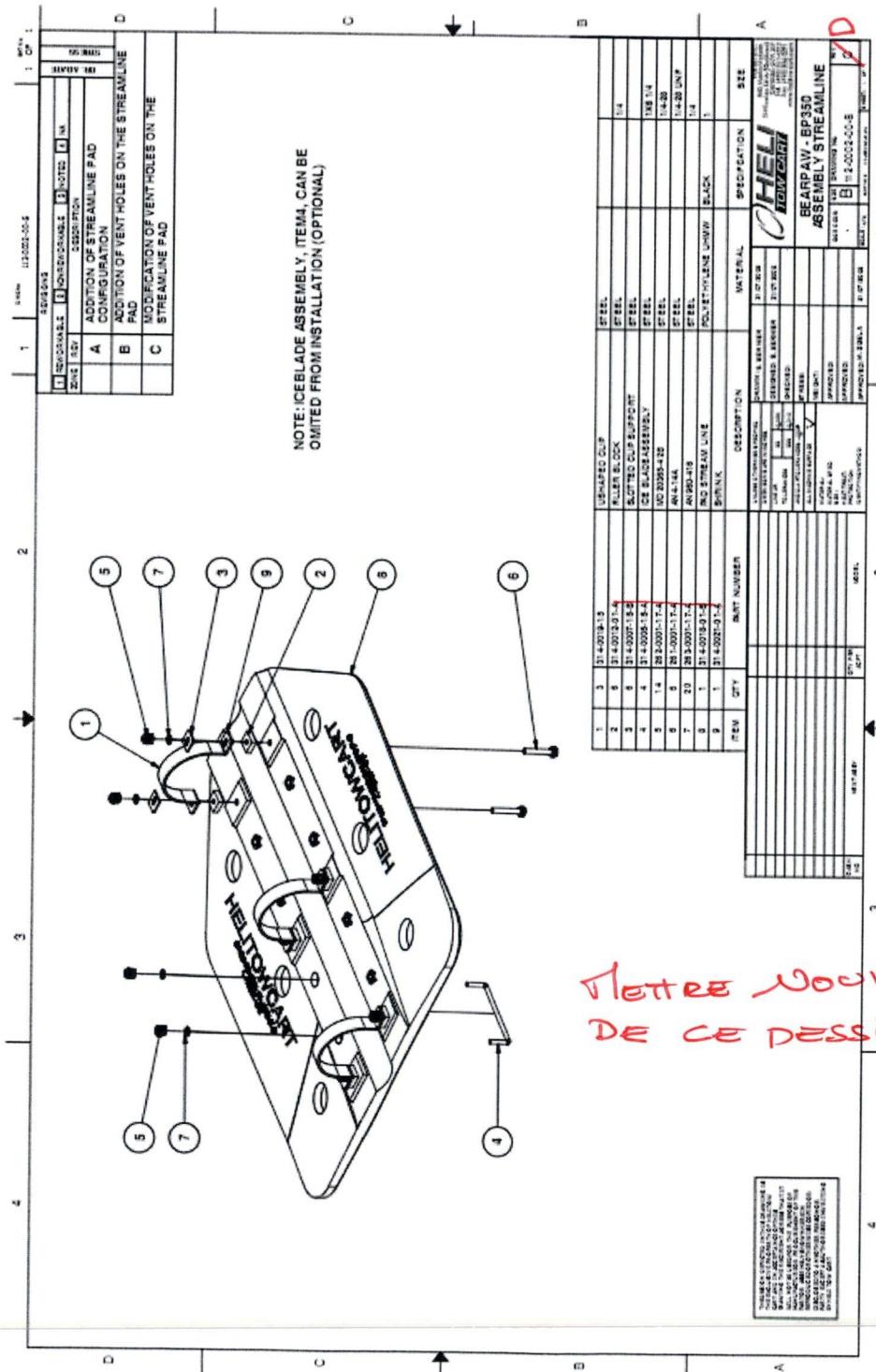
314-0020-00-E
BearPaw Model BP350
Installation Instructions – AS350/355

Annex A

~~STREAMLINE~~ BearPaw Assembly, Drawing no. ~~VNR~~112-0002-00-S~~8~~,
P/N 112-0002-00-S



314-0020-00-E
BearPaw Model BP350
Installation Instructions – AS350/355

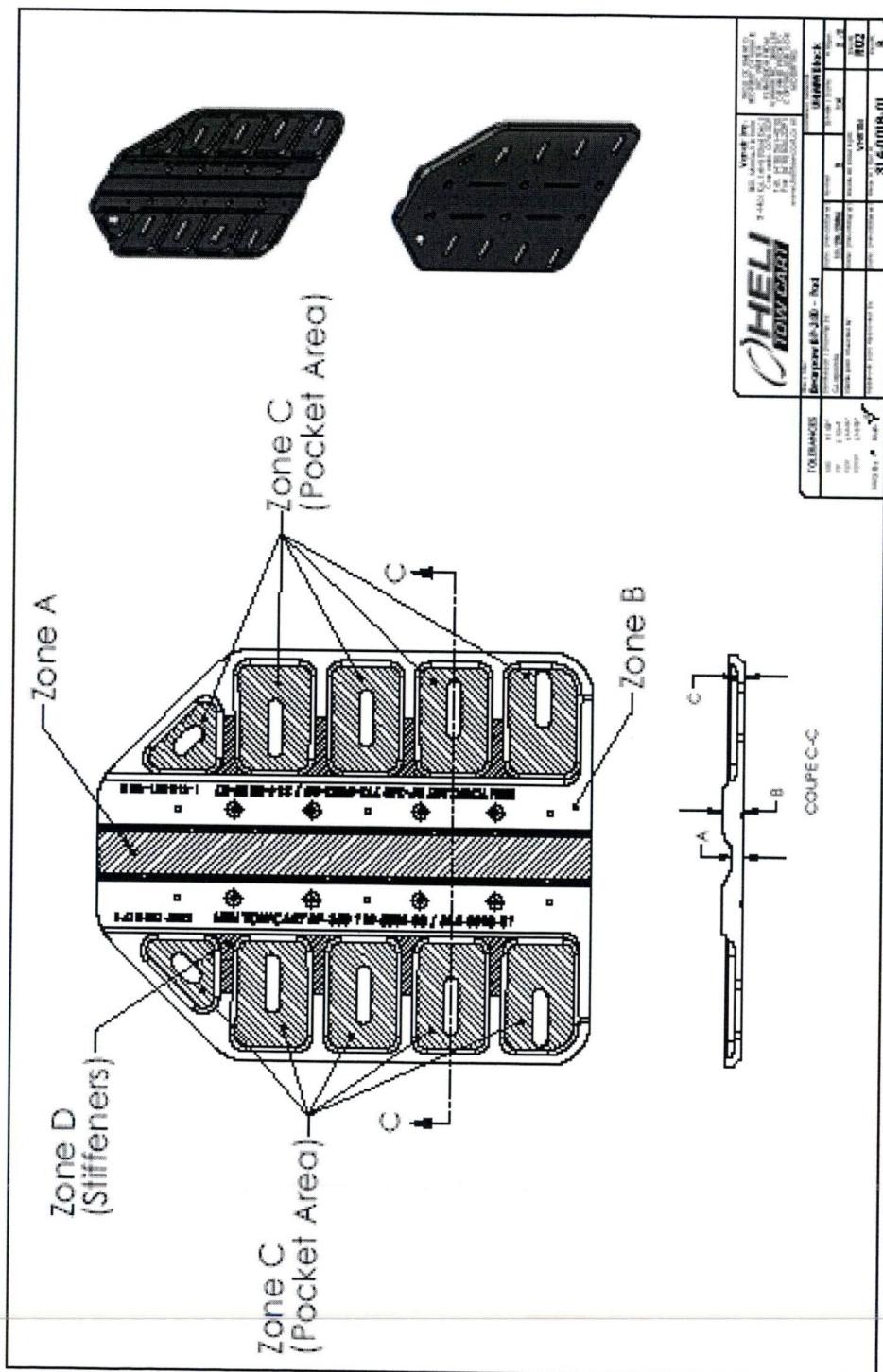




314-0020-00-E
BearPaw Model BP350
Installation Instructions – AS350/355

Annex B *314-0018-01*
BearPaw Pad, Drawing no. *NR106*. Page 2 of 2.
P/N 314-0018-01

Page *13* of 16





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BearPaw Model BP350
Installation Instructions – AS350/355

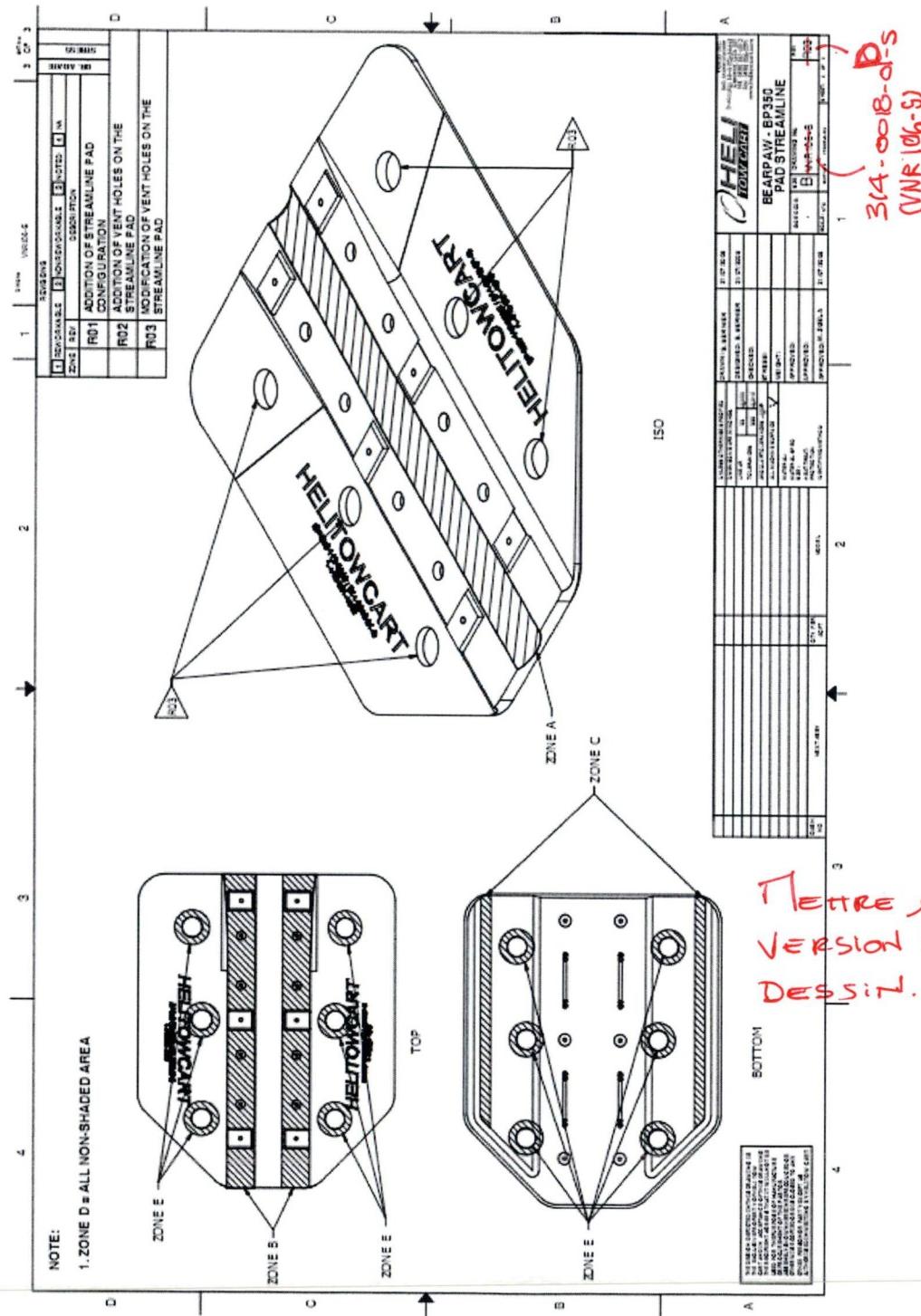
Annex B

314-0018-01-S

~~STREAMLINE~~ BearPaw Pad, Drawing no. ~~VNP106S~~. Page 2 of 2.

P/N 314-0018-01-S

BearPaw Model BP350
Installation Instructions – AS350/355





Master Document List

Helitowcart

Eurocopter Model AS 350/355 Series Helicopters Installation of BearPaw Model BP350

Report: HTC-MDL-BP-AS350/355-1000 (Rev G)

APPROVED BY:

Mirko Zgela

DATE: DECEMBER 21, 2012

Mirko Zgela
Design Approval Representative DAR #310

Revision	Revision Date	Revision of Entry	Entered by
A	Nov 22, 2006	Initial issue	N/A
B	Jan 28, 2007	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
C	Feb 28, 2007	Addition of streamline pad configuration. Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
D	July 27, 2008	Addition of vents holes in the streamline pad.	M.Z.
E	Aug 01, 2008	Modification of vents holes in the streamline pad.	M.Z.
F	April 8, 2010	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00)	M.Z.
G	December 21, 2012	Updated Tolerance data regarding Pad and Updated referenced document identification and revisions	M.Z.

1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355-1000	Compliance Plan – Eurocopter Model AS350/355 Series Helicopters – Installation of BearPaw Model BP350	NC	DAR 310	Nov 22, 2006
HTC-314-0020-00-E	BearPaw Model BP350 – Installation Instruction – AS350/355 Series Helicopters	F	DAR 310	Dec 21, 2012
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	A	DAR 310	July 31, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	A	DAR 310	July 31, 2008

2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
112-0002-00-S	BearPaw BP350 – Assembly Streamline	D	DAR 310	Dec 21, 2012
314-0002-15 (VNR084)	BearPaw – Iceblade	A (R01)	DAR 310	Apr 24, 2006
314-0004-15 (VNR085)	BearPaw – Iceblade Threaded Rod	A (R01)	DAR 310	Apr 24, 2006
314-0005-15 (VNR086)	BearPaw – Iceblade Assembly	A (R01)	DAR 310	Apr 24, 2006
314-0018-01 (VNR106)	BearPaw BP350 - Pad	B (R02)	DAR 310	Sept 26, 2006
314-0018-01-S (VNR106-S)	BearPaw BP350 – Pad Streamline	D	DAR 310	Dec 21, 2012
314-0019-15 (VNR107)	BearPaw BP350 – U Shaped Clip	A (R01)	DAR 310	Sept 29, 2006
314-0007-15 (VNR089)	Bearpaw – Slotted Clip Support	B (R04)	DAR 310	July 31, 2006
314-0012-01 (VNR099)	Filler Block 1/4"	A (R01)	DAR 310	Aug 8, 2006



3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01	Material Properties - UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05	Heat Shrink Specifications	A	N/A	Sept 6, 2006

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REVISIONS & APPROVAL	p.10
Annex A (BearPaw Assembly Drawing)	
Annex B (BearPaw Pad Drawing)	

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw Model BP 350 (P/N 112-0002-00 or P/N 112-0002-00-S) for the AS 350 and AS 355 series helicopters.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance when installed on your helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel: 1 (418) 561-4512 Fax: 1 (418) 836-4575 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following helicopter models:

Table 2 – Helicopter Model Effectivity

Make	Model	Transport Canada Type Certificate Data Sheet
Eurocopter	AS 350 D	H-83
Eurocopter	AS 350 D1	
Eurocopter	AS 350 B	
Eurocopter	AS 350 B1	
Eurocopter	AS 350 B2	
Eurocopter	AS 350 B3	
Eurocopter	AS 350 BA	
Eurocopter	AS 355 E	H-87
Eurocopter	AS 355 F	
Eurocopter	AS 355 F1	
Eurocopter	AS 355 F2	
Eurocopter	AS 355 N	

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION

BearPaw Installation

Reference Documentation:

- [1] Helicopter Maintenance Manual AS 350 or AS 355 as applicable.

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] as applicable to your helicopter model to allow a ground clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the skid tube wear shoes.

Step 2: IceBlade Installation

Note: The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the IceBlades

- With IceBlade Option
- Install ice blades (Qty: 4) (Iceblades P/N 314-0005-15) under BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A.
- Secure ice blades with washer (Washer P/N 263-0001-17) and nut (P/N 262-0001-17).

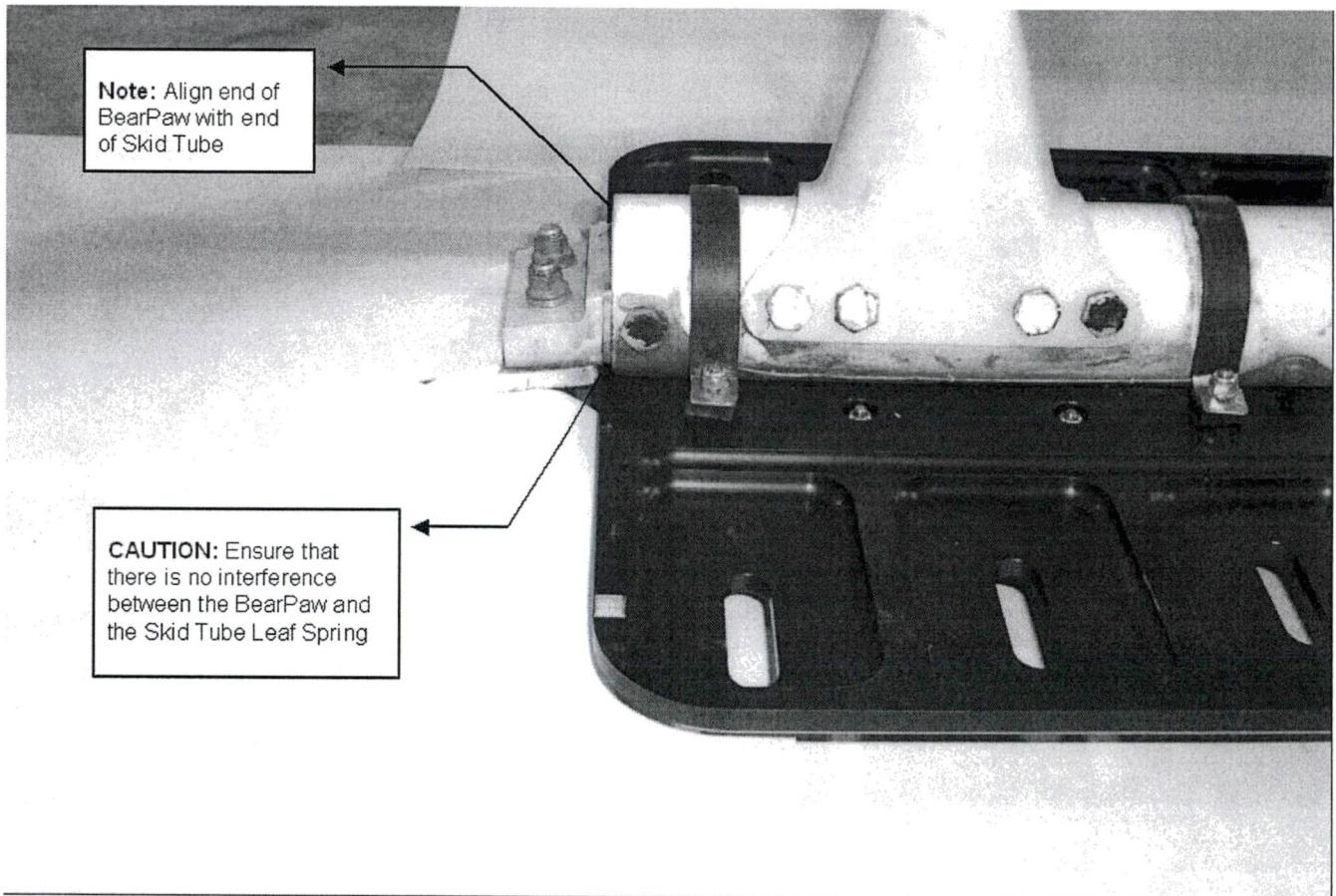
Step 3: BearPaw Installation

- Position the BearPaw under the skid as shown in Figure 1 with narrow edge pointing forward.
- Insert washers (P/N 263-0001-17) through all six bolts: 6x(261-0001-17);
- Insert bolts (P/N 261-0001-17) and washer (Washer P/N 263-0001-17) through BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;
- Insert filler blocks (P/N314-0012-01) as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;

Note: The use of filler blocks (P/N314-0012-01) may be replaced or complemented by the use of washers (P/N 263-0001-17) to fill in the gap. Bolts (P/N 261-0001-17) may be replaced by longer or shorter AN4 bolts as required.

- Insert both U-shaped clips (P/N 314-0019-15) through bolts: 6x(261-0001-17);
- Insert slotted clip supports (P/N 314-0007-15) through all six bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 – BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) - Alignment on Skid



BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), slotted clip support (P/N 314-0007-15) on U-shaped clips (P/N 314-0019-15),
- Remove washers (P/N 263-0001-17), U-shaped clips (P/N 314-0019-15), filler blocks (P/N 314-0012-01), and remove BearPaw pad (P/N 314-0018-01) or (P/N 314-0018-01-S Streamline);
- Inspect skid tubes to confirm serviceability
- If the skid tube shoes have been removed, re-install shoes as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required using data provided in Table 3.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP350 (P/N 112-0002-00)	19,9 Lb 9,0 Kg	N/A	N/A	159,4 in. 404.9 cm	3172.0 in-lb 36.44 m-kg
Helitowcart BearPaw Model BP350 - Streamline (P/N 112-0002-00-S)	18,3 Lb 8,5 Kg	N/A	N/A	159,4 in. 404.9 cm	2917.0 in-lb 34.41 m-kg

Note: Weight and moment provided are for full kit installation.

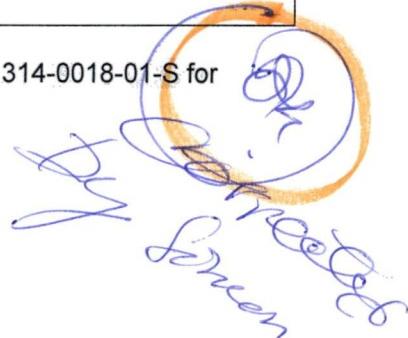
Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part / Dwg No.	Additional Drawing Reference No./ Name
BearPaw Model BP350	1	112-0002-00	112-0002-00 / BearPaw Assembly, or 112-0002-00-S /Bear Paw Streamline Assembly
BearPaw pad ⁽¹⁾	1	314-0018-01	(VNR106) / BearPaw BP350 – Pad
BearPaw pad streamline ⁽¹⁾	1	314-0018-01S	(VNR106-S) / BearPaw BP350 – Pad Streamline
U Shaped Clips	3	314-0019-15	(VNR107) / BearPaw BP350 - U Shaped Clips
Slotted Clip Support	6	314-0007-15	(VNR089) / BearPaw - Slotted Clip Support
Filler blocks 1/4"	6	314-0012-01	(VNR099) / BearPaw – Filler block 1/4"
Bolts	6	261-0001-17	Bolt- AN4-14
Nuts	6	262-0001-17	Nut- MS20365-428
Washers	12	263-0001-17	Washer – AN960-416
Shrink	3	314-0021-01	BearPaw – Shrink Specifications & Install.(1"x6.25")
IceBlade Option Model OIB	4	314-0005-15	(VNR086) / IceBlade Assembly
Nuts	8	262-0001-17	Nut- MS20365-428
Washers	8	263-0001-17	Washer – AN960-416

Note (1): Use pocked shaped BearPaw Pad P/N 314-0018-01 or streamlined Pad P/N 314-0018-01-S for P/N 112-0002-00-S as applicable.



INSPECTION

Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:

Tables 5 & 6 – Tolerances for cracks & wear and

Annex B – BearPaw Allowable Damage Drawing 314-0018-01 (VNR-106) page 2 of 2 for Pocket pad or
314-0018-01-S (VNR106-S) page 3 of 3 for Streamlined Pad.

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 500 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the helicopter landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 500 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

500 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section “BearPaw Removal”,
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:

Tables 5 & 6 – Tolerances for cracks & wear and

Annex B – BearPaw Allowable Damage Drawing 314-0018-01 (VNR-106) page 2 of 2 for Pocket pad or
314-0018-01-S (VNR106-S) page 3 of 3 for Streamlined Pad.

Table 5 – Tolerances for Cracks & Wear / Pocket Pad 314-0018-01 (VNR 106)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000	0,250	
C	0,375	0,075	Pockets: Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,50	None	Stiffeners: NO cracks in stiffeners.
E	0,375	0,075	For P/N 112-0002-00-S Only

Table 6 – Tolerances for Cracks & Wear / Streamline Pad 314-0018-01-S (VNR 106-S)

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000	0,250	
C	0,375	0,075	Pockets: Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,50	None	Stiffeners: NO cracks in stiffeners.
E	0,375	0,075	For P/N 112-0002-00-S Only

Overhaul Requirements

- Not applicable for the designated application of this device.

REVISIONS & APPROVAL

Revisions

Date	Rev	Nature of Revisions
Nov 20, 2006	A	Initial issue
Jan 29, 2007	B	Minor editorials. Change to weight & Balance Data to reflect production model. Change in inspection schedule from 300 to 500 hours to match existing landing gear periodicity.
Feb 28, 2008	C	Introduction of new streamline BearPaw Pad configuration as alternate.
Aug 01, 2008	D	Modification of vent holes on the streamline pad
April 8, 2010	E	Correction to C of G data
December 21, 2012	F	Updated Pad Tolerances and Document identifications . Improved page set up for reader convenience.

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	Date: Dec 21, 2012
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	Date: Dec 21, 2012

Annex A

See: BearPaw Assembly, drawing no. (112-0002-00) for Pocket style pad or;
 BearPaw Assembly, drawing no. (112-0002-00-S) for Streamline style pad

Annex B

See: BearPaw Pad, drawing no. 314-0018-01 (VNR106) page 2 of 2 for Pocket style pad or;
 BearPaw Pad, drawing no. 314-0018-01-S (VNR106-S) page 2 of 2 for Streamline style pad.

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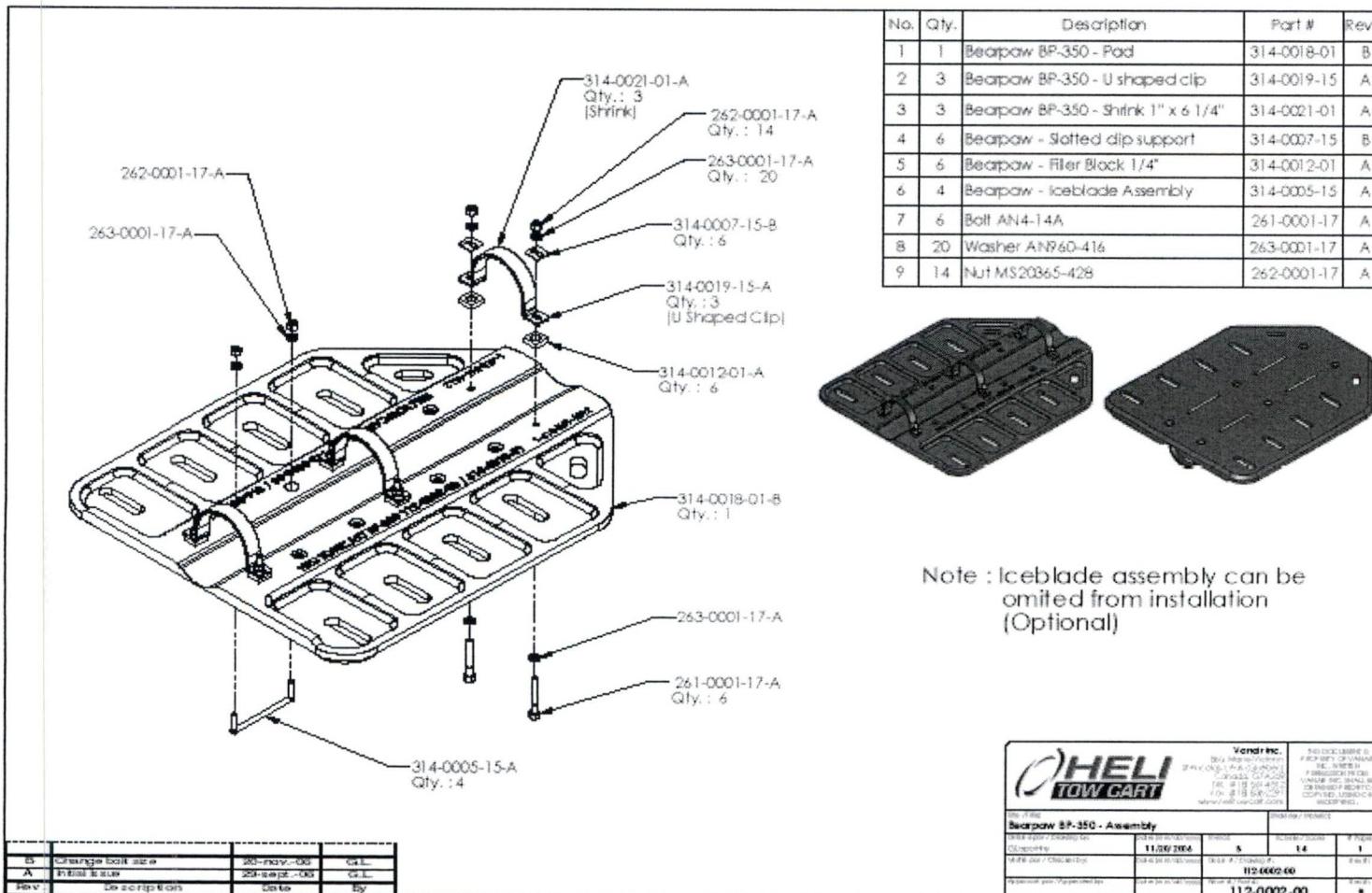


314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355

Annex A

BearPaw Assembly, Drawing no. 112-0002-00 .
P/N 112-0002-00

314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355



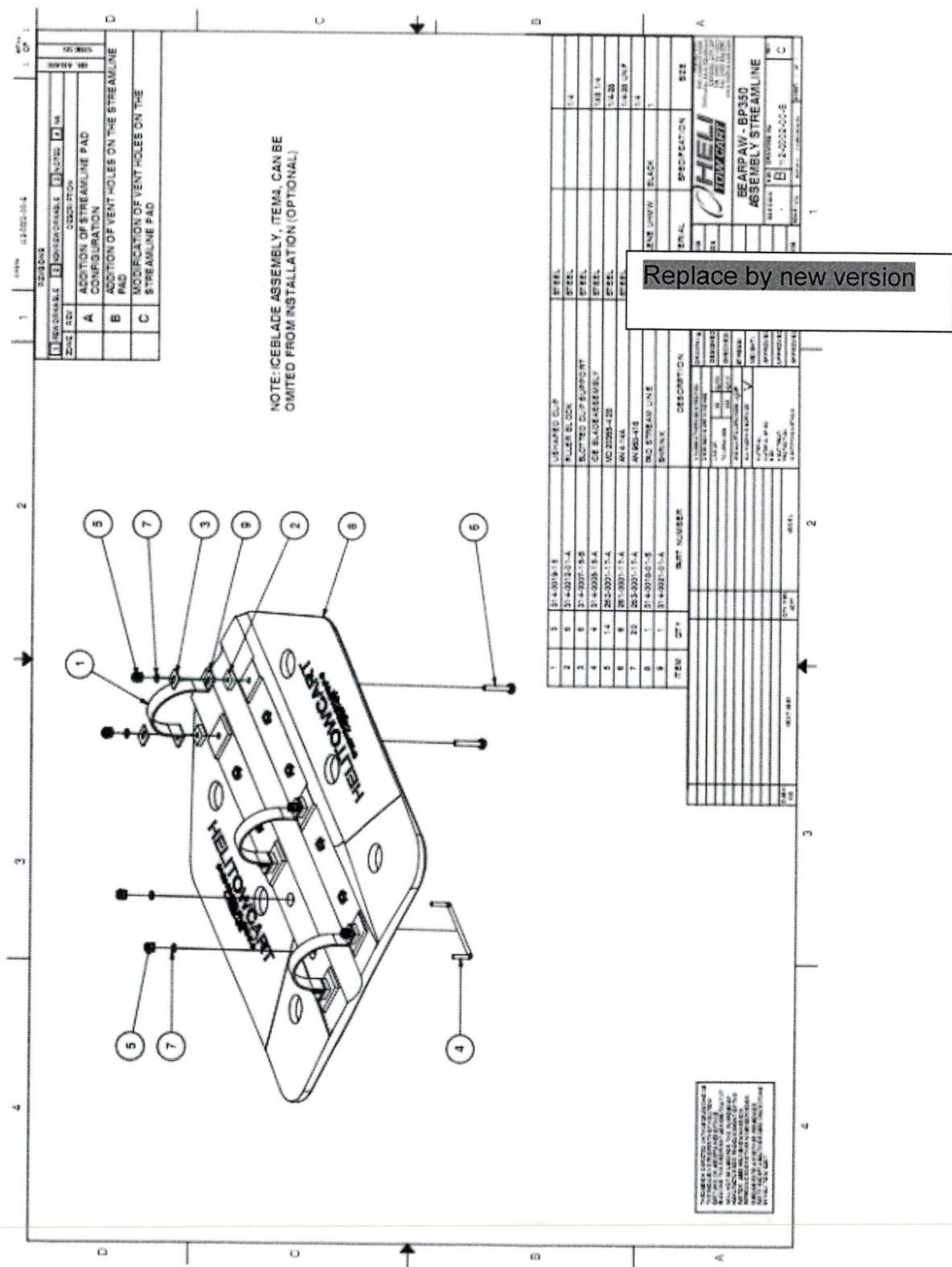
BearPaw BP-350 - Assembly		Description / Details	
Part	Description	Quantity	Part Number
BP	Change bolt size	14	112-0002-00
A	Initial size	6	112-0002-00
Rev	Ice blade weight	8	112-0002-00



314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355

Annex A

BearPaw Assembly, Drawing no. 112-0002-00-S.
P/N 112-0002-00-S





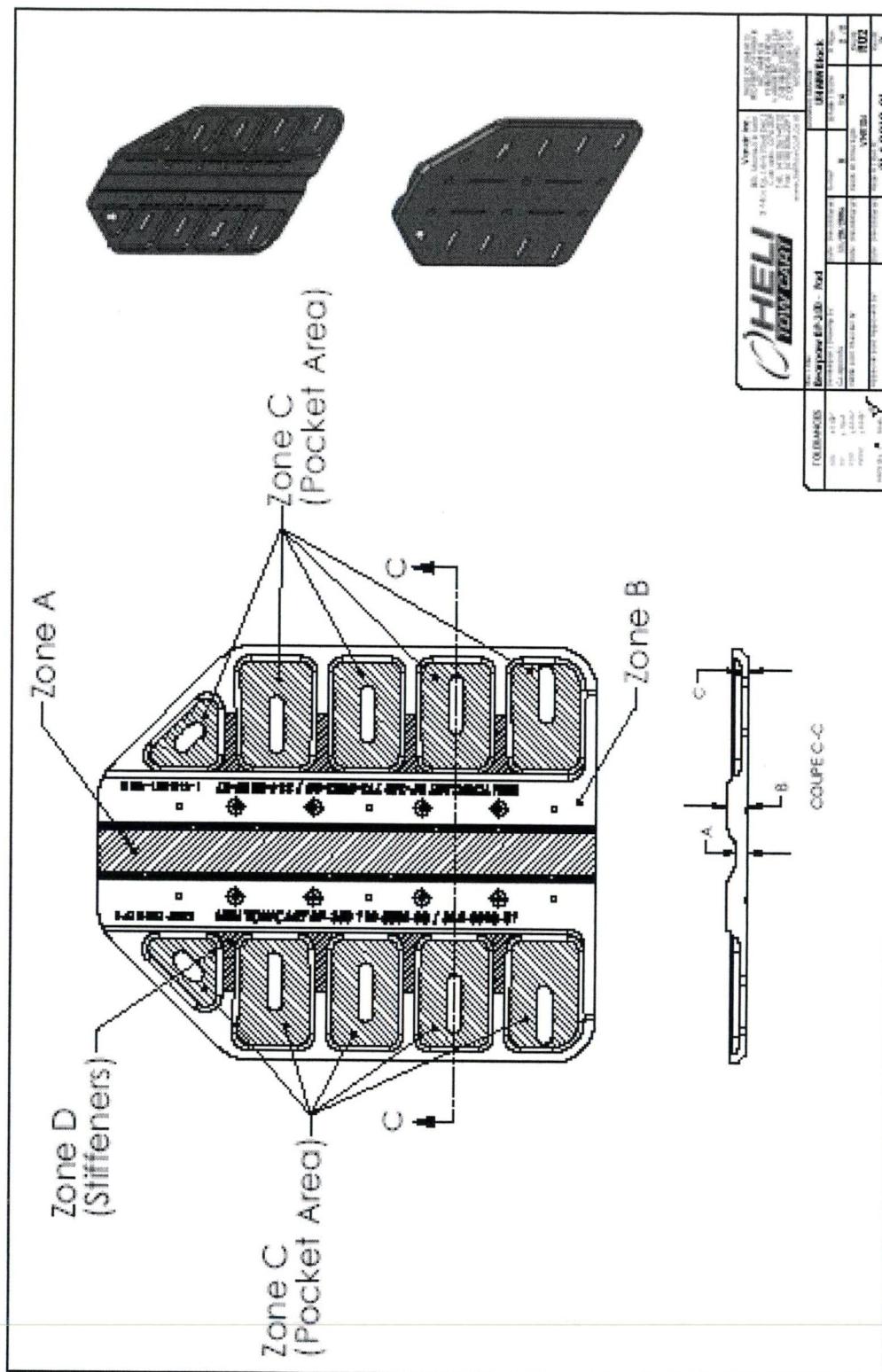
314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355

Annex B

BearPaw Pad, Drawing no. 314-0018-01 (VNR106) Page 2 of 2 Pocket Style Pad.
P/N 314-0018-01

Page 15 of 18

Tel: 1-418-561-4512, Fax: 1-418-836-2291, 860 Marie-Victorin, Saint-Nicolas, Lévis, Québec, Canada G7A 3S9.
www.helitowcart.com info@helitowcart.com





314-0020-00-E Rev. F
BearPaw Model BP350
Installation Instructions – AS350/355

Annex B

BearPaw Pad, Drawing no. 314-0018-01-S (VNR106-S) Page 3 of 3 Streamline Style Pad.
P/N 314-0018-01-S

